

# Modified Completion Report Monitoring

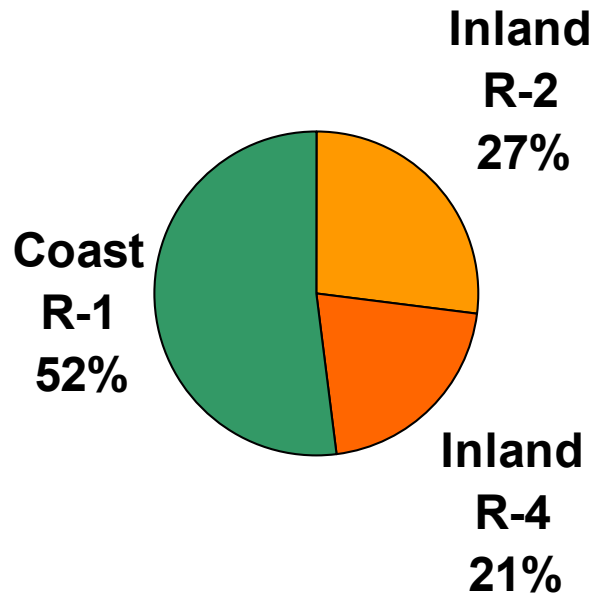
Draft Analysis 2005



# **Modified Completion Report Monitoring 2001 to 2004**

- Sample size is 12.5% of THPs undergoing Completion Report field inspections.
- Use CDF's Forest Practice Inspectors to collect the monitoring data.

# Modified Completion Report Monitoring 2001 to 2004



- 281 THPs Sampled

- 52% Coast District (R-1)
- 48% Inland Districts (R-2 & R-4)



# Modified Completion Report Monitoring

- Watercourse and Lake Protection Zones (WLPZs)
  - WLPZ Percent Total Canopy
  - WLPZ Erosion Features
- Roads
- Watercourse Crossings

# **Modified Completion Report Monitoring**

http://

[www.bof.fire.ca.gov/board/msg\\_archives](http://www.bof.fire.ca.gov/board/msg_archives)

- MCR Methods and Procedures, as well as this Presentation, are available on-line at the Monitoring Study Group's Archived Documents page.



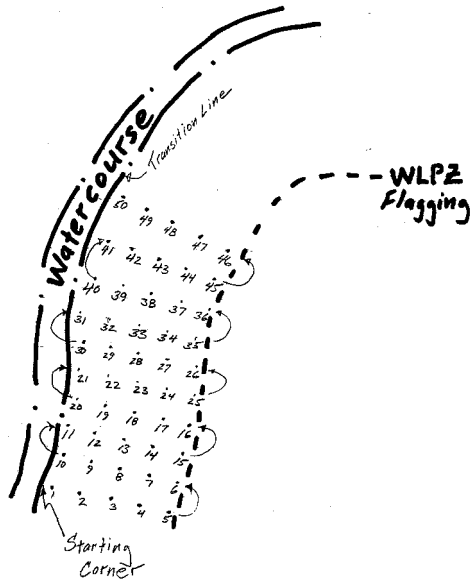
## Modified Completion Report Monitoring Percent WLPZ Canopy

- 281THPs sampled, 198 with WLPZs.



# Modified Completion Report Monitoring Percent WLPZ Canopy

- Randomly located 200 ft WLPZ segments for Class I and II watercourses.
- A 50 point grid pattern and a sighting tube are used for measurement.





# Class I WLPZ % Total Canopy

(through 2004)

	<b>Overall</b>	<b>No Harvest</b>	<b>Harvest</b>	
<b>Coast</b> (Region I)	<b>83%</b> n=31	<b>84%</b> n=15	<b>80%</b> n=16	
<b>Inland</b> (Regions 2&4)	<b>69%</b> n=30	<b>70%</b> n=7	<b>69%</b> n=23	

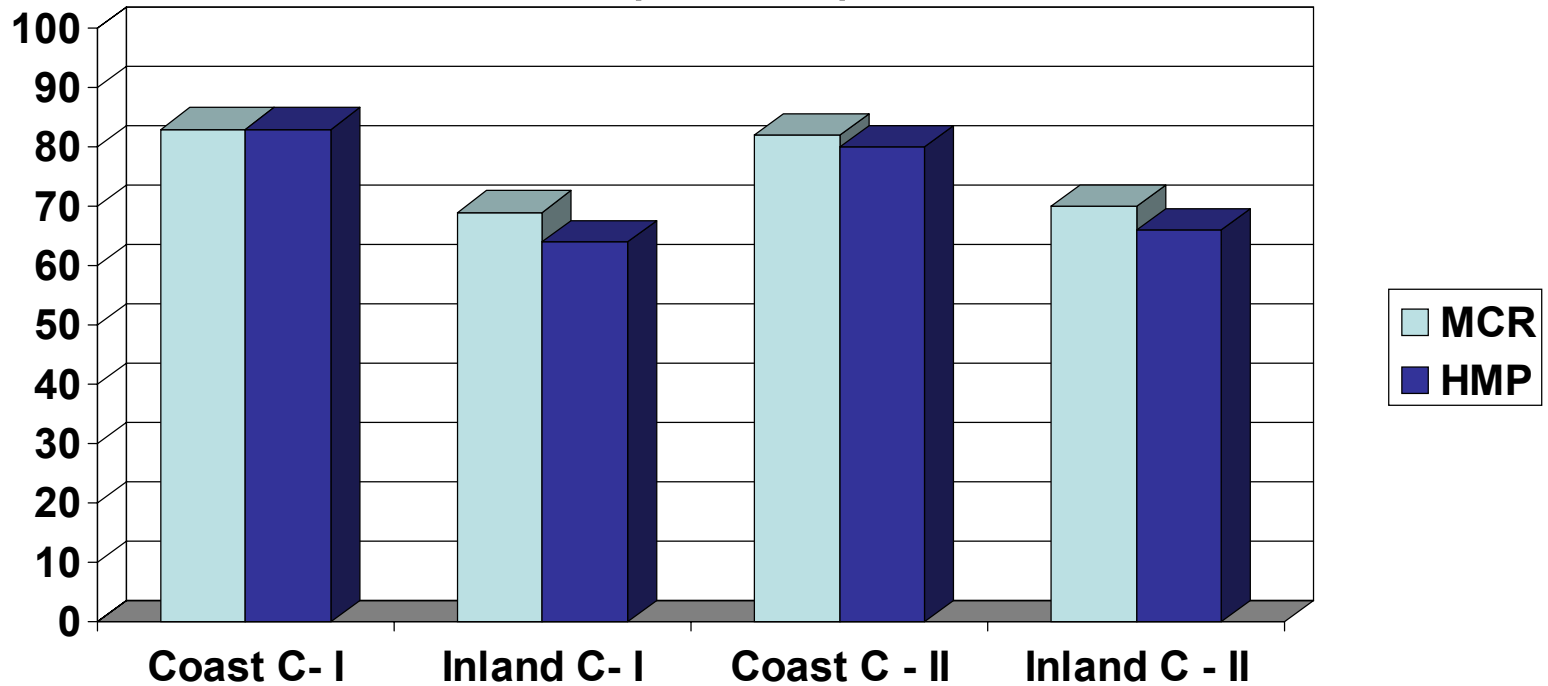
# Class II WLPZ % Total Canopy

(through 2004)

	<b>Overall</b>	<b>No Harvest</b>	<b>Harvest</b>	
<b>Coast</b> (Region I)	<b>82%</b> n=87	<b>85%</b> n=42	<b>80%</b> n=45	
<b>Inland</b> (Regions 2&4)	<b>70%</b> n=50	<b>72%</b> n=24	<b>69%</b> n=26	

## Comparing Monitoring Program Results

# WLPZ % Total Canopy MCR vs. Hillslope Monitoring Program (HMP)



# Comparing Monitoring Program Results

## Class I WLPZs MCR vs. HMP

		<b>MCR Monitoring Class I WLPZ percent canopy</b>	<b>HMP (1999-2001) Class I WLPZ percent canopy</b>	
<b>Coast</b> (Region I)		<b>83%</b> n=31	<b>83%</b> n=27	
<b>Inland</b> (Regions 2&4)		<b>69%</b> n=30	<b>64%</b> n=30	

## Comparing Monitoring Program Results

# Class II WLPZs MCR vs. HMP

	MCR Monitoring Class II WLPZ percent canopy	HMP (1999-2001) Class II WLPZ percent canopy	
<b>Coast</b> (Region I)	<b>82%</b> n=87	<b>80%</b> n=114	
<b>Inland</b> (Regions 2&4)	<b>70%</b> n=50	<b>66%</b> n=67	

# **WLPZ**

## **Erosion Features**

- Of 198 WLPZs sampled, 19 WLPZs (10%) had one or more erosion features.
- Of the 19 WPLZs with erosion features, only 2 WLPZs (1%) had erosion features related to current timber operations.



# WLPZ Erosion Features Related to Current THP

- 1 with sediment deposition from landing
- 1 with gully (<60% groundcover)

# WLPZ Erosion Features

## Not Related to Current Operations

- 6 related to inner gorges
- 2 related to streambank failures
- 1 sediment deposition from a scarp
- 4 related to old skid trails/roads
- 1 gully originating at county road
- 1 related to an eroding cow trail
- 1 related to a breached irrigation ditch

# Modified Completion Report Monitoring Roads



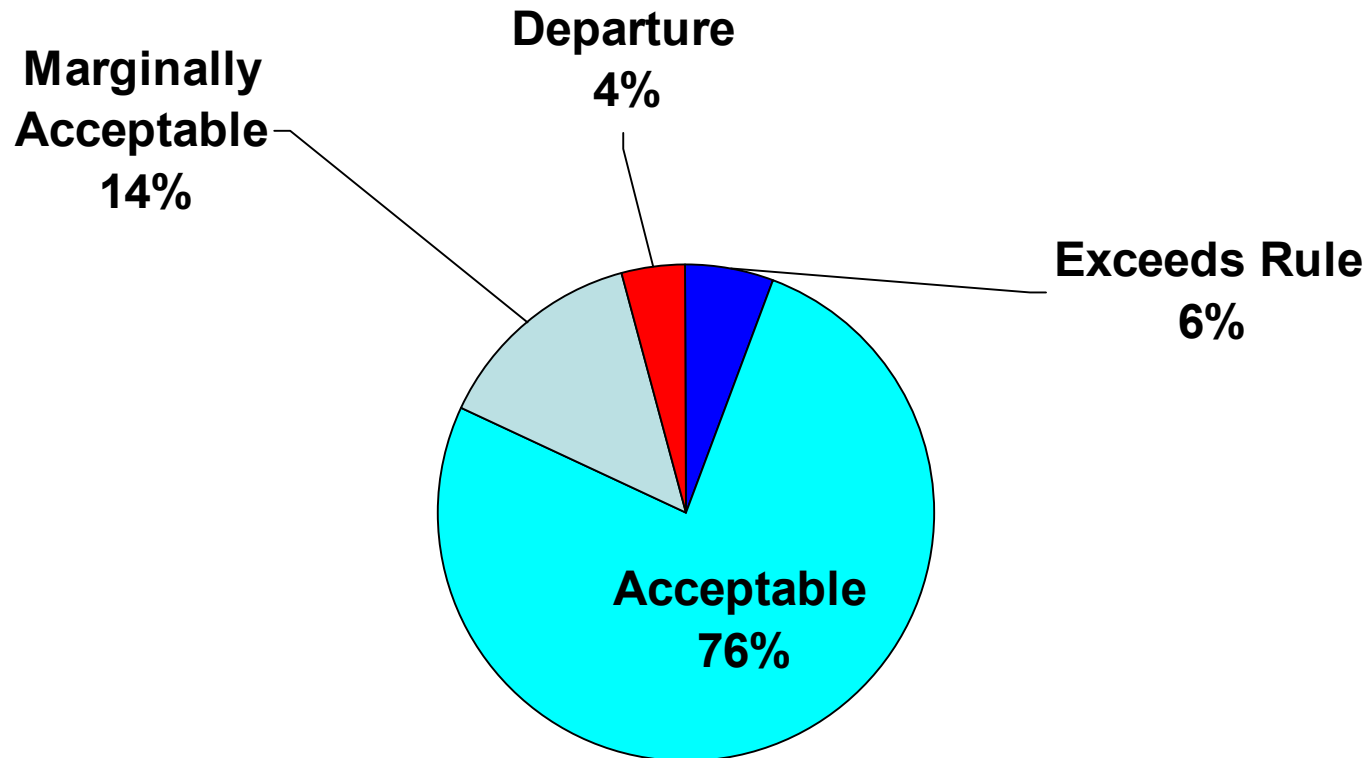
- 244 randomly-selected, one-thousand foot road segments sampled and rated for implementation .  
(244,000 feet is about 46 miles)
- 1,991 road features rated for Forest Practice Rule (FPR) implementation .

# Modified Completion Report Monitoring Roads

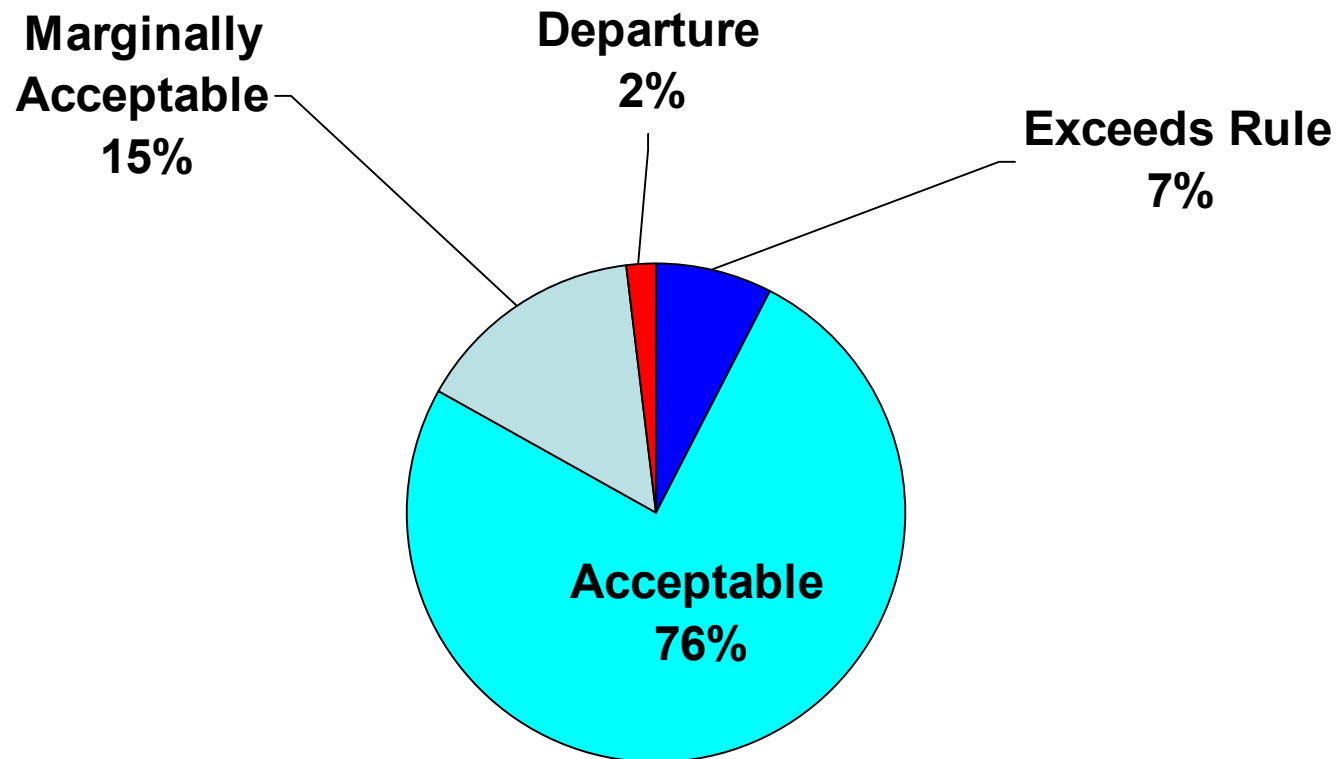


- 83 departures total or about 1.8 departures per mile of road.
- However, departures tend to be clustered, 5 road segments (2%) account for 33 departures (40%).

# Road Features Rated for Implementation $n = 1,991$

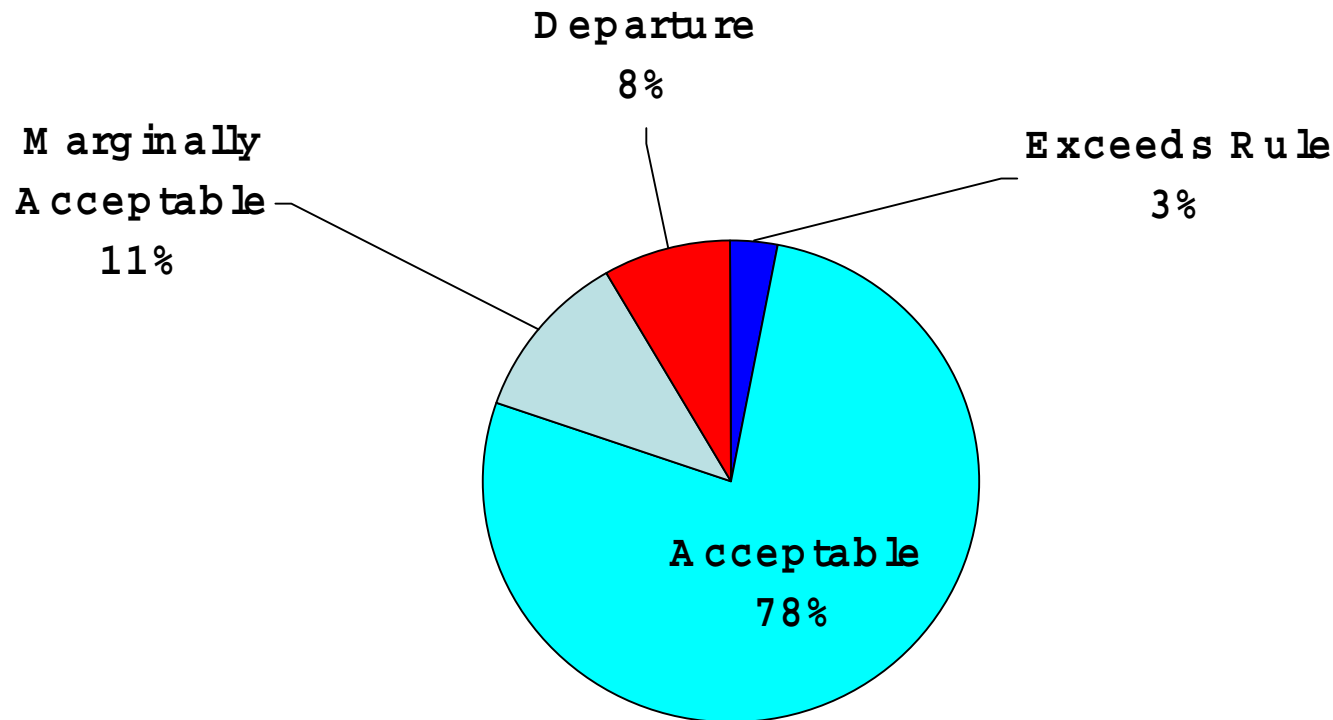


# Coast (R-1) Road Features Rated for Implementation $n = 1,285$

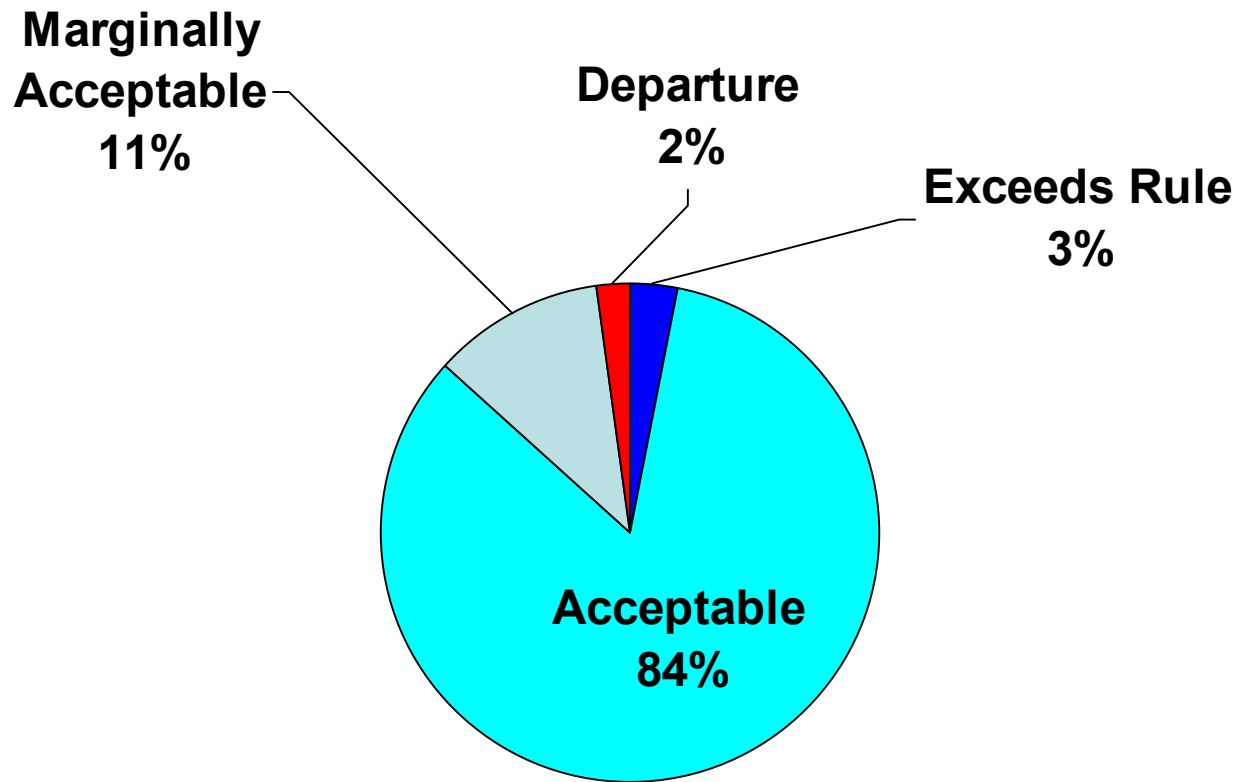




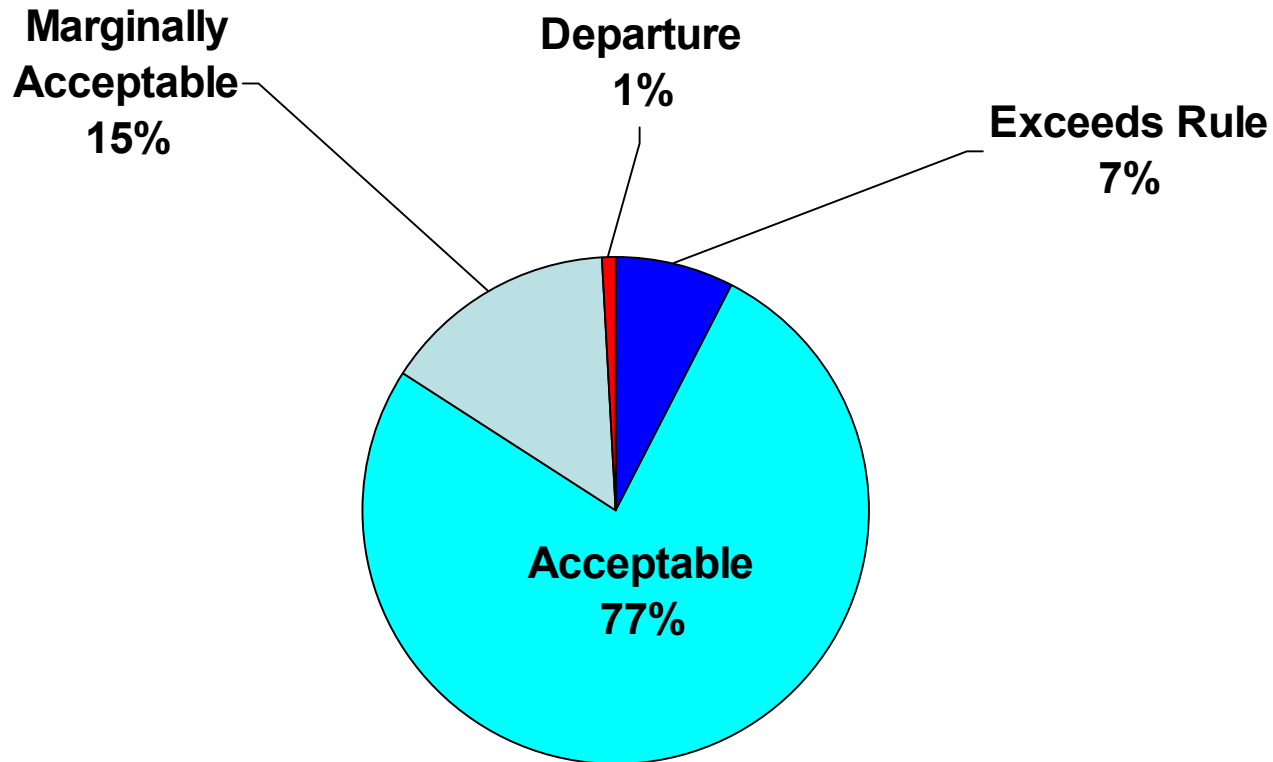
# Inland (R-2 & R-4) Road Features Rated for Implementation $n = 706$



# Inland (R-2 & R-4) Hypothetical Exercise: Find and Fix the Worst 6% of Roads Segments



# Coast (R-1) Hypothetical Exercise: Find and Fix the Worst 6% of Roads Segments

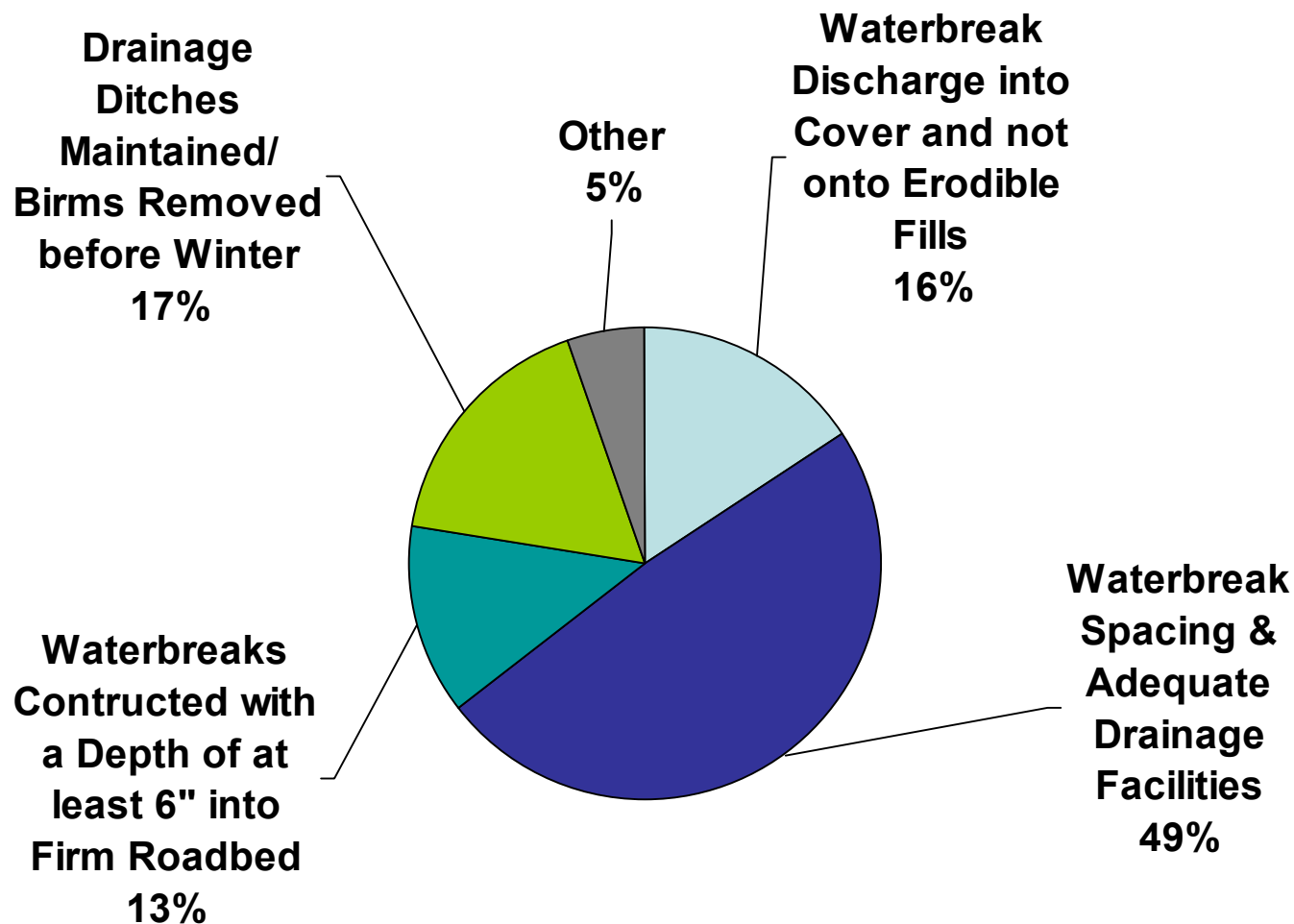


# Modified Completion Report Monitoring Roads

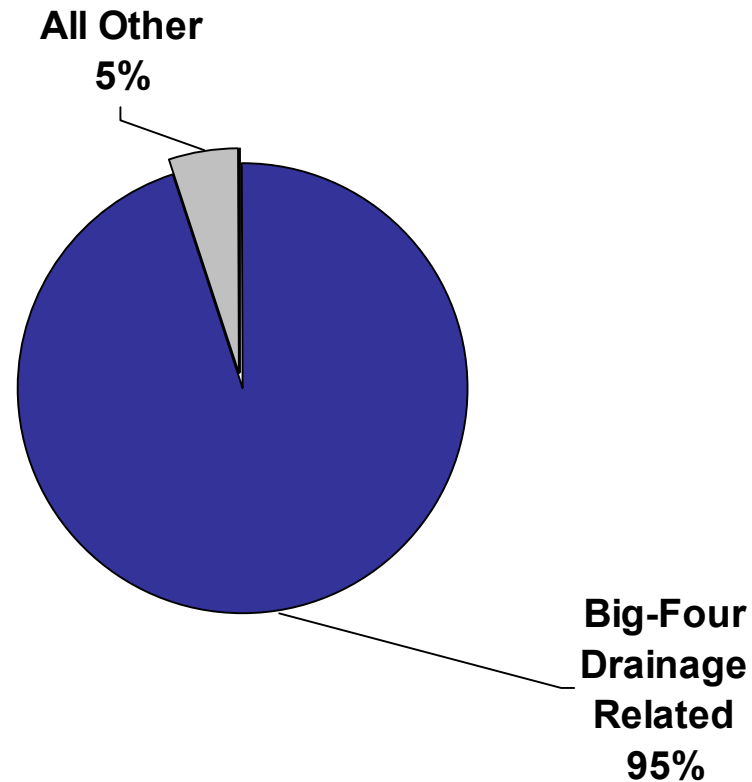


- Departures exhibit a pattern.
- In a word it's **DRAINAGE.**

# Road-related Departures from FPRs



# Drainage, Drainage, Drainage



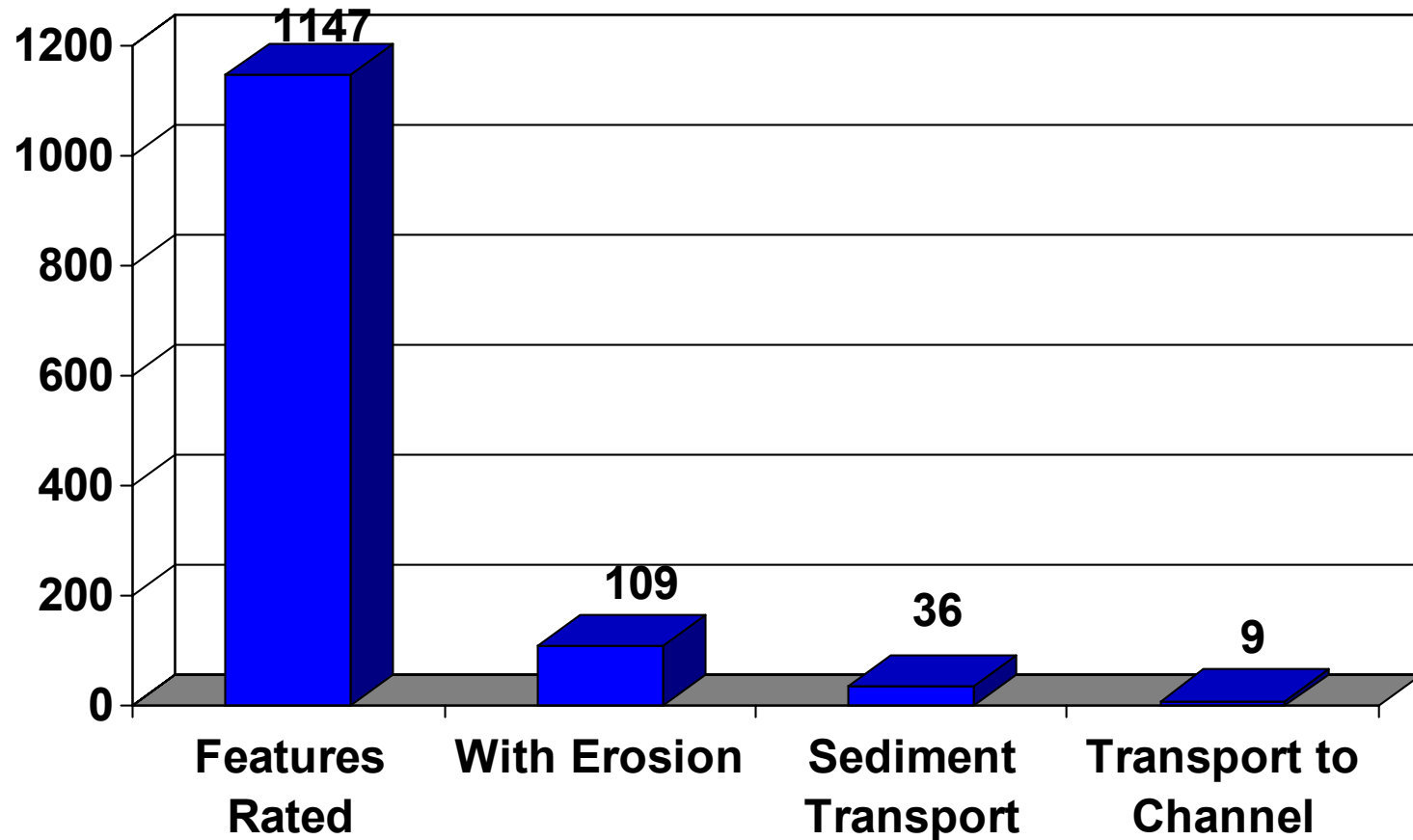


# Modified Completion Report Monitoring Roads

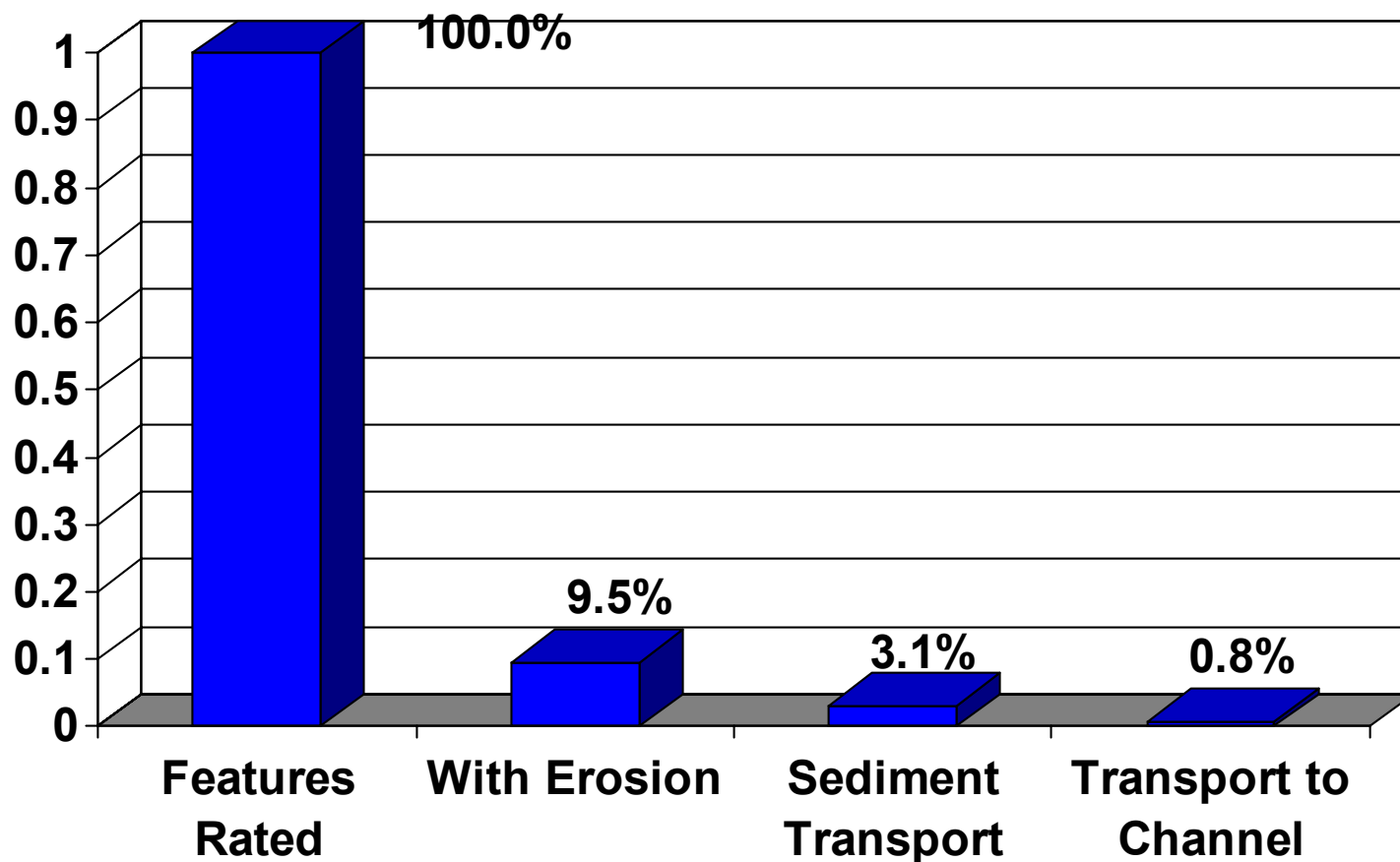


- Of 244 road segments sampled:
- 130 road segments were rated for effectiveness.
- These 130 road segments include 1,147 road-related features that were rated for effectiveness.

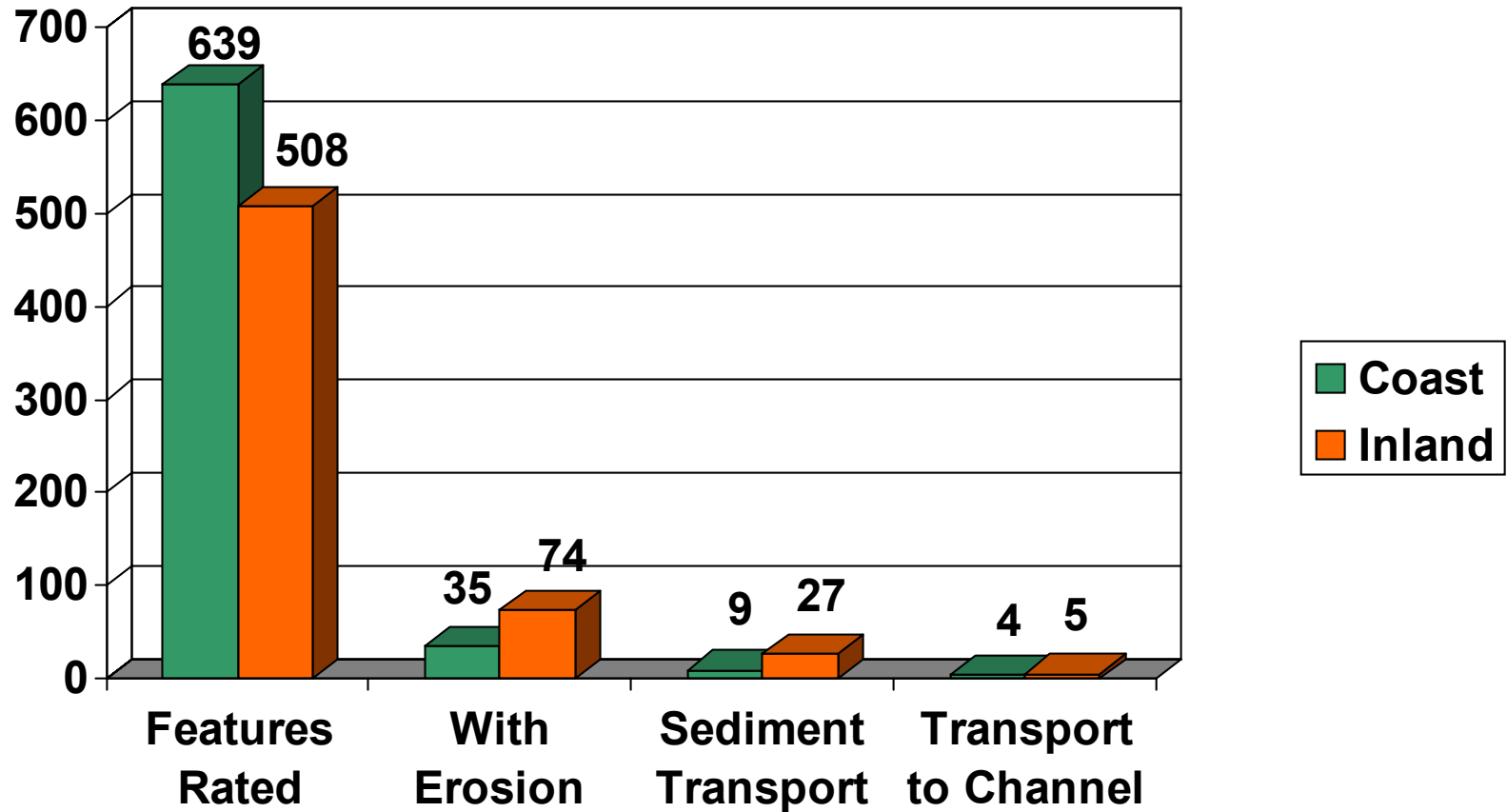
# Road Features Rated for Effectiveness



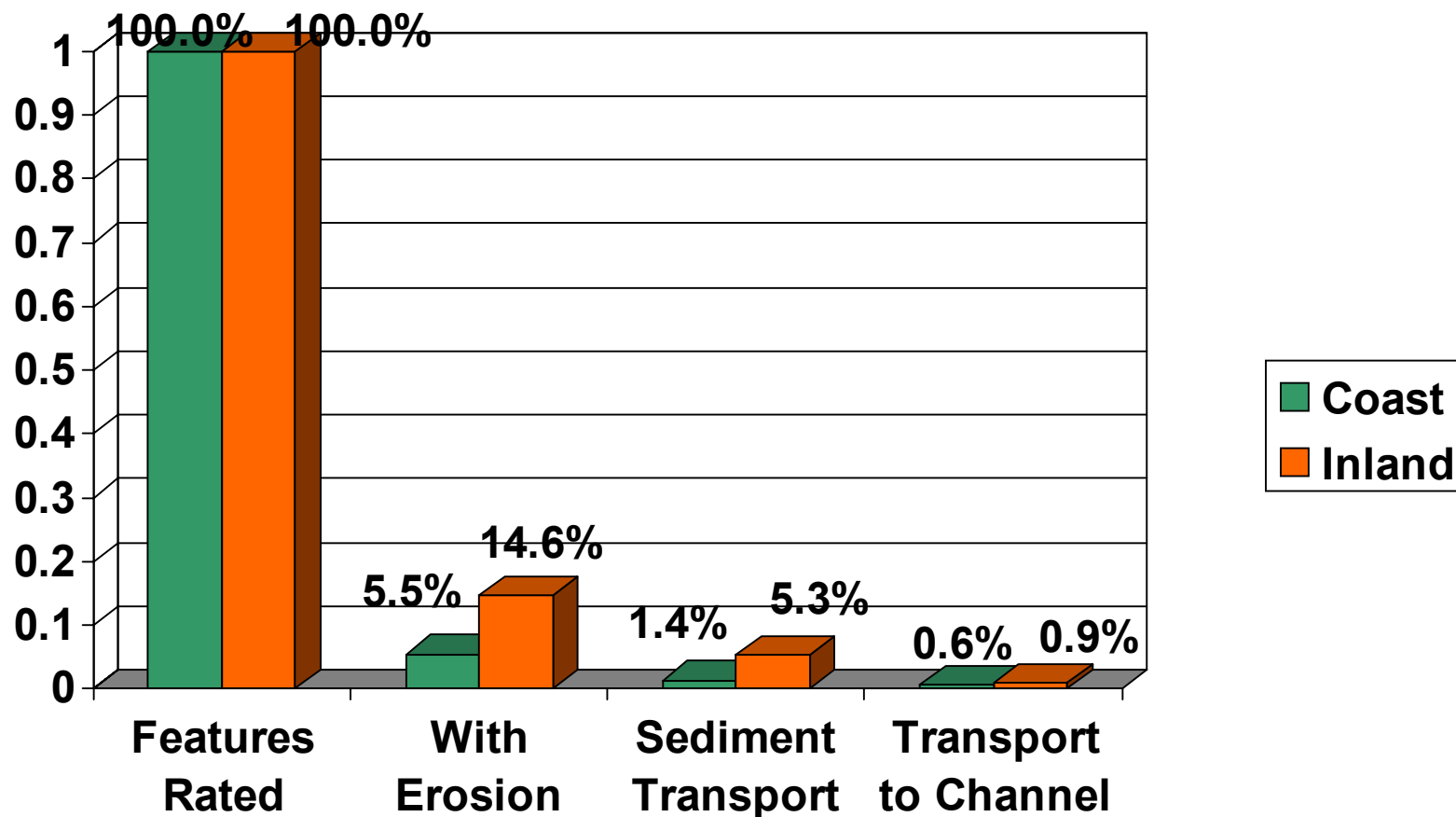
# Road Features Rated for Effectiveness as Percentages



# Road Features Rated for Effectiveness



# Road Features Rated for Effectiveness as Percentages



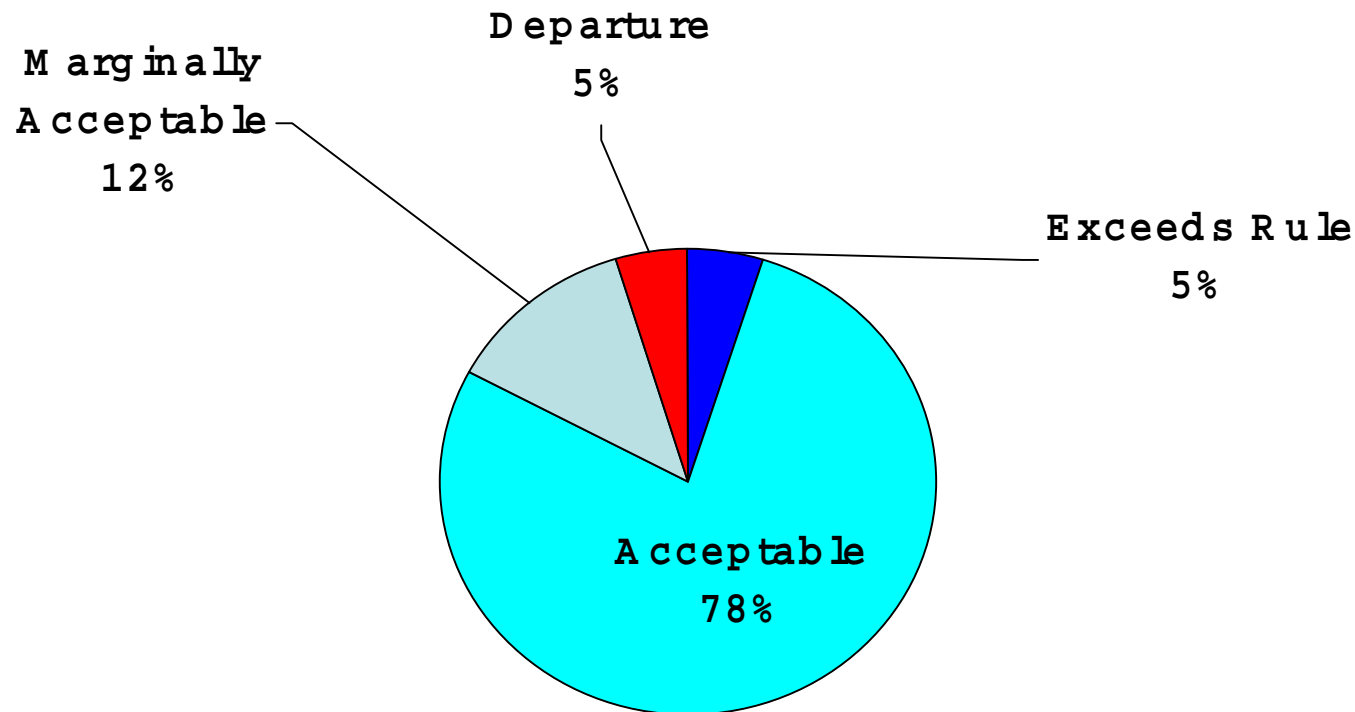
# Road Feature Implementation and Effectiveness



- Better implementation results in better effectiveness, but not perfection.
- Departures are much more likely to result in erosion, sediment transport, and transport to channels.

# Implementation Ratings for Road Features Rated for Effectiveness

n = 1,147



<b><u>Effectiveness by Road Feature Implementation Rating</u></b>	<b>No Erosion</b>	<b>No Sediment Transport</b>	<b>No Transport to Channel</b>
<b>Exceeds</b> Rule/THP requirement n = 57	<b>98%</b>	<b>100%</b>	<b>100%</b>
<b>Acceptable</b> n = 893	<b>95%</b>	<b>99%</b>	<b>99%</b>
<b>Marginally Acceptable</b> n = 142	<b>77%</b>	<b>91%</b>	<b>99%</b>
<b>Departures</b> n = 55	<b>47%</b>	<b>65%</b>	<b>89%</b>



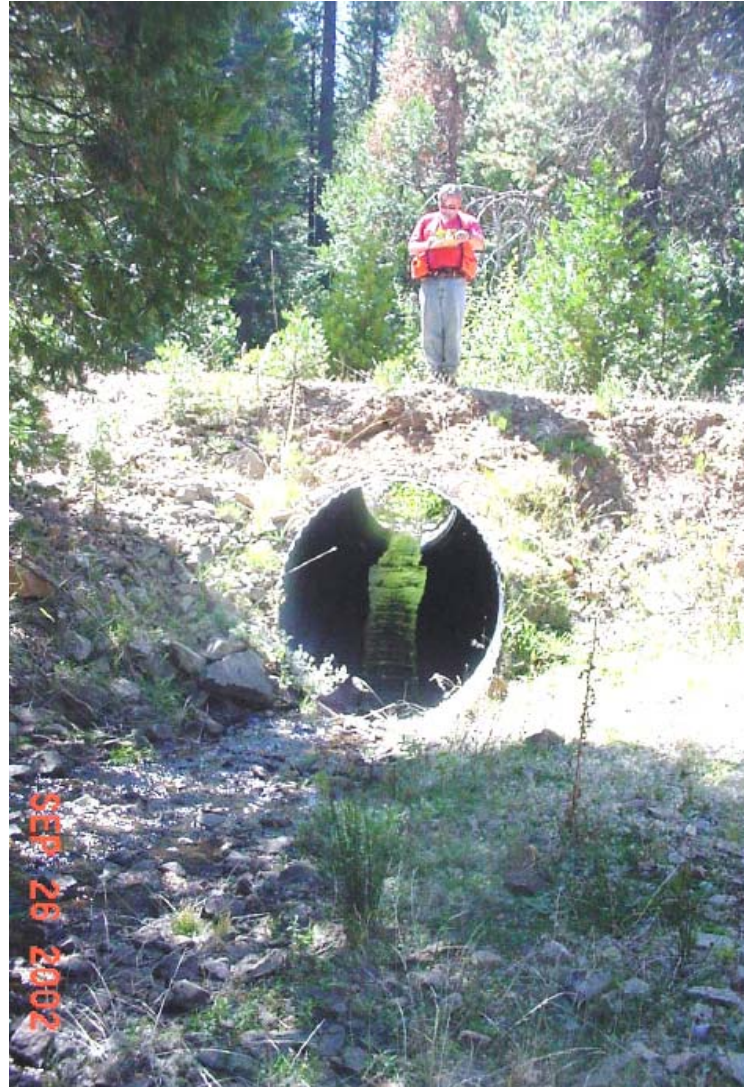
# Transport to Channel

- Evidence of transport to channel was observed on 9 features out of 1,147 rated for effectiveness or about 0.8%.
- Implementation ratings for these 9 features included:
  - 3 Acceptable,
  - 1 Marginally Acceptable, and
  - 5 Departures

# Transport to Channel

- Two features rated as acceptable and one feature rated as marginally acceptable involved watercourse crossings. One rated as acceptable involved a drainage feature and a high intensity storm.
- The 5 features rated as departures:
  - 2 involved discharges onto erodible materials or failure to discharge into cover.
  - 3 involved inadequate number of drainage facilities/structures or inadequate spacing.

# Modified Completion Report Monitoring— Watercourse Crossing Evaluation



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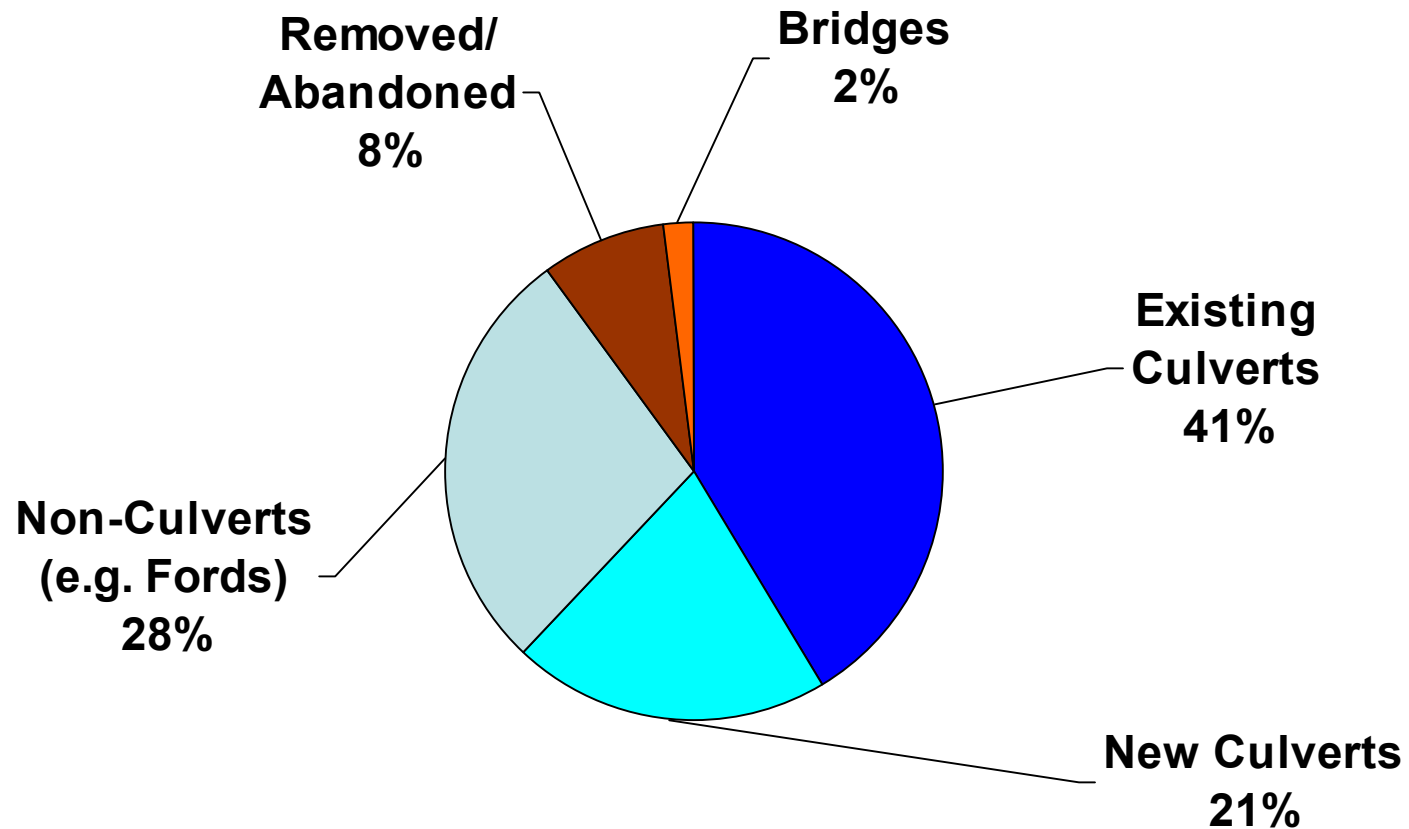
# Modified Completion Report Monitoring Watercourse Crossing Implementation



366 Watercourse Xings  
sampled, including:

- 227 culverts
  - 151 existing culverts
  - 76 new culverts
- 102 non-culverts (fords),
- 30 removed/abandoned
- 7 bridges.
  
- FPR departure and marginally-acceptable rates are low.

# Modified Completion Report: Crossings Rated for Implementation (n= 366)





# FPR Departures & MAs for Existing Culverts



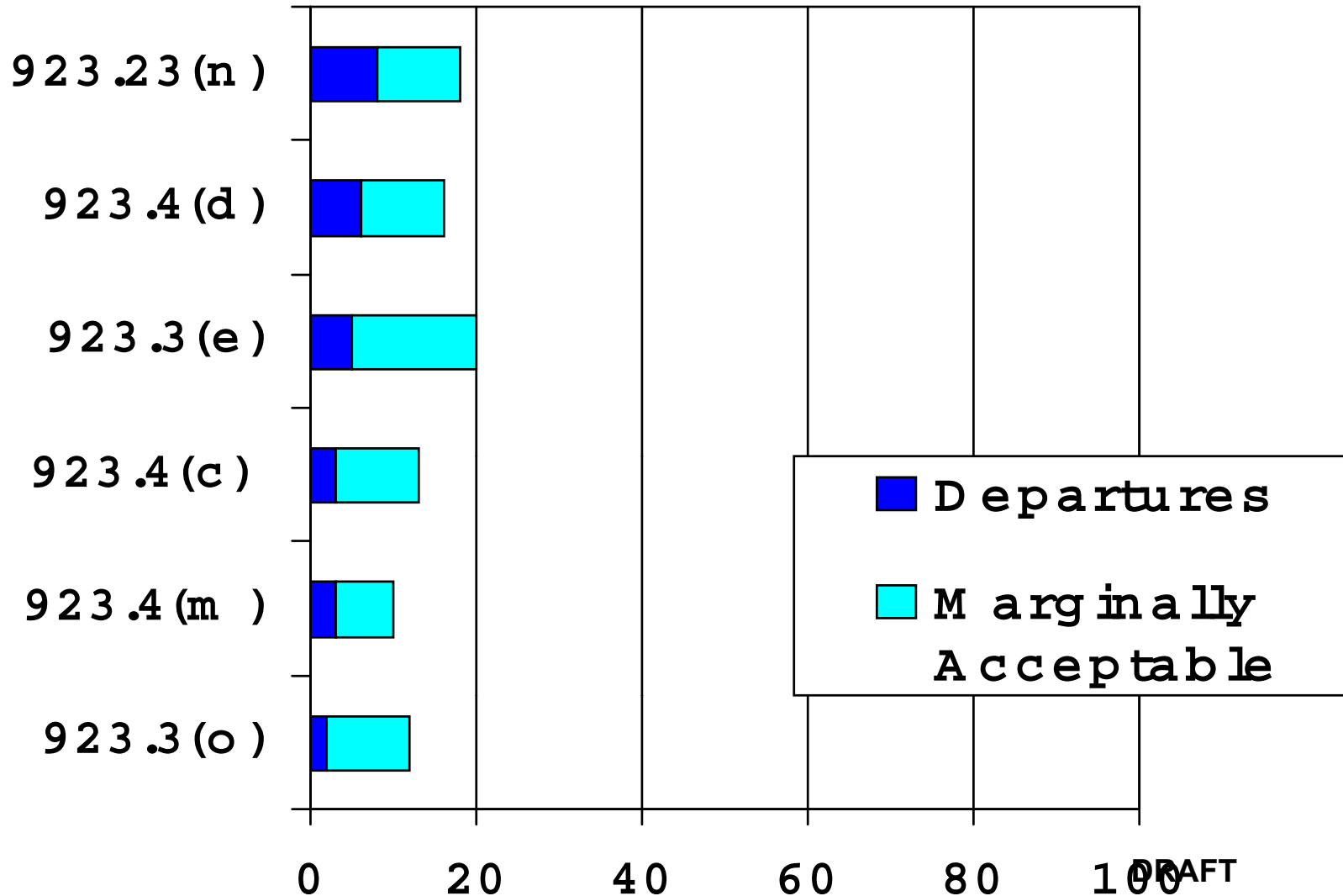
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# Top Six FPR Departures & MAs for Existing Culverts

- 923.4(n) Xing/approaches maintained to avoid diversion.
- 923.4(d) Xing open to unrestricted passage of water.
- 923.3(e) Xing/fills built/maintained to prevent diversion.
- 923.4(c) Waterbreaks maintained to divert into cover.
- 923.4(m) Inlet/outlet, etc, repaired /replaced as needed.
- 923.2 (o) No discharge on erodible fills w/o suitable energy dissipators.

# Top Six by Percentage for Existing Culverts $n = 151$

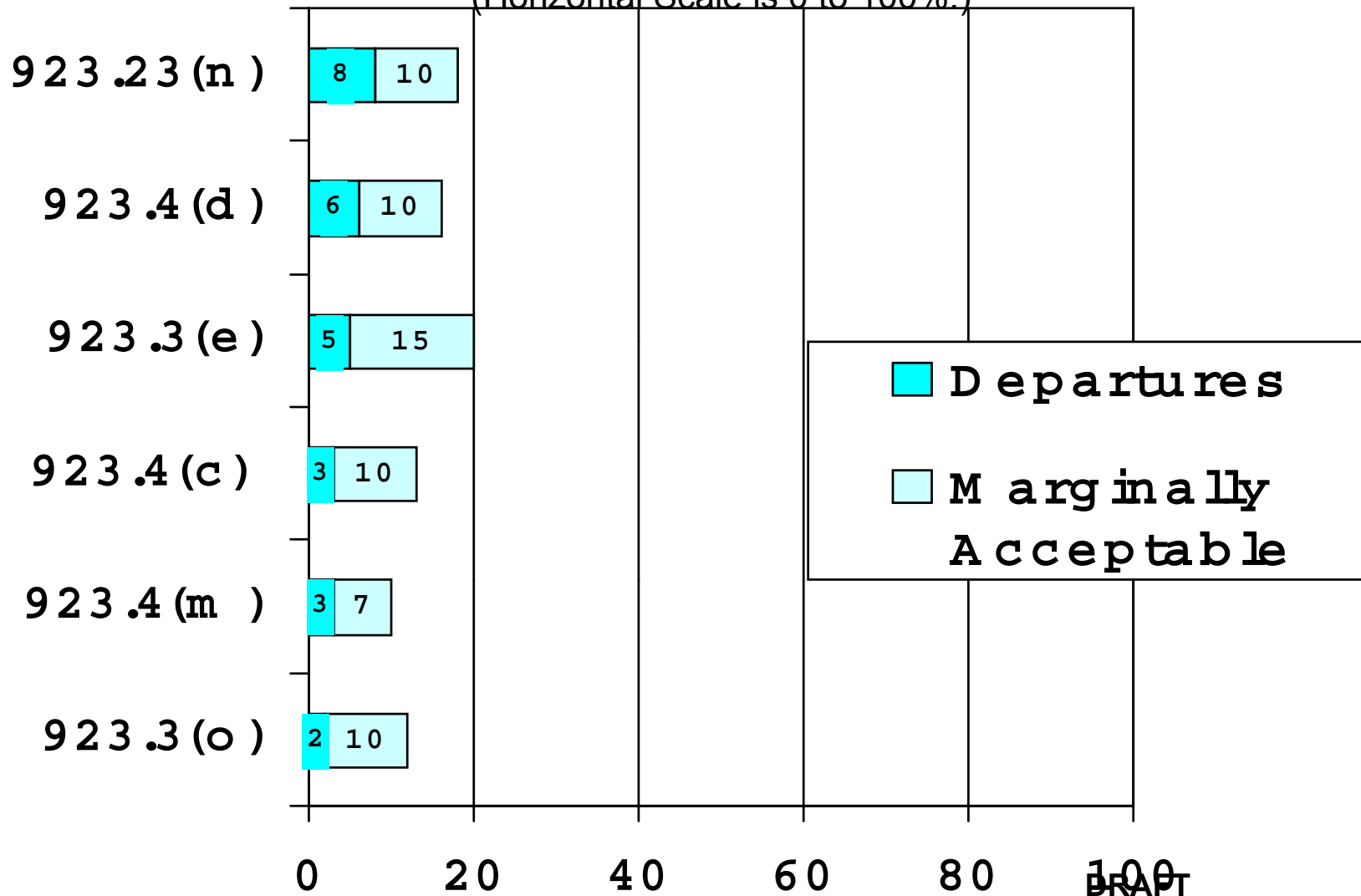
(Horizontal Scale is 0 to 100%.)





# Top Six by Percentage for Existing Culverts $n = 151$

(Horizontal Scale is 0 to 100%.)



# FPR Departures & MAs for New Culverts

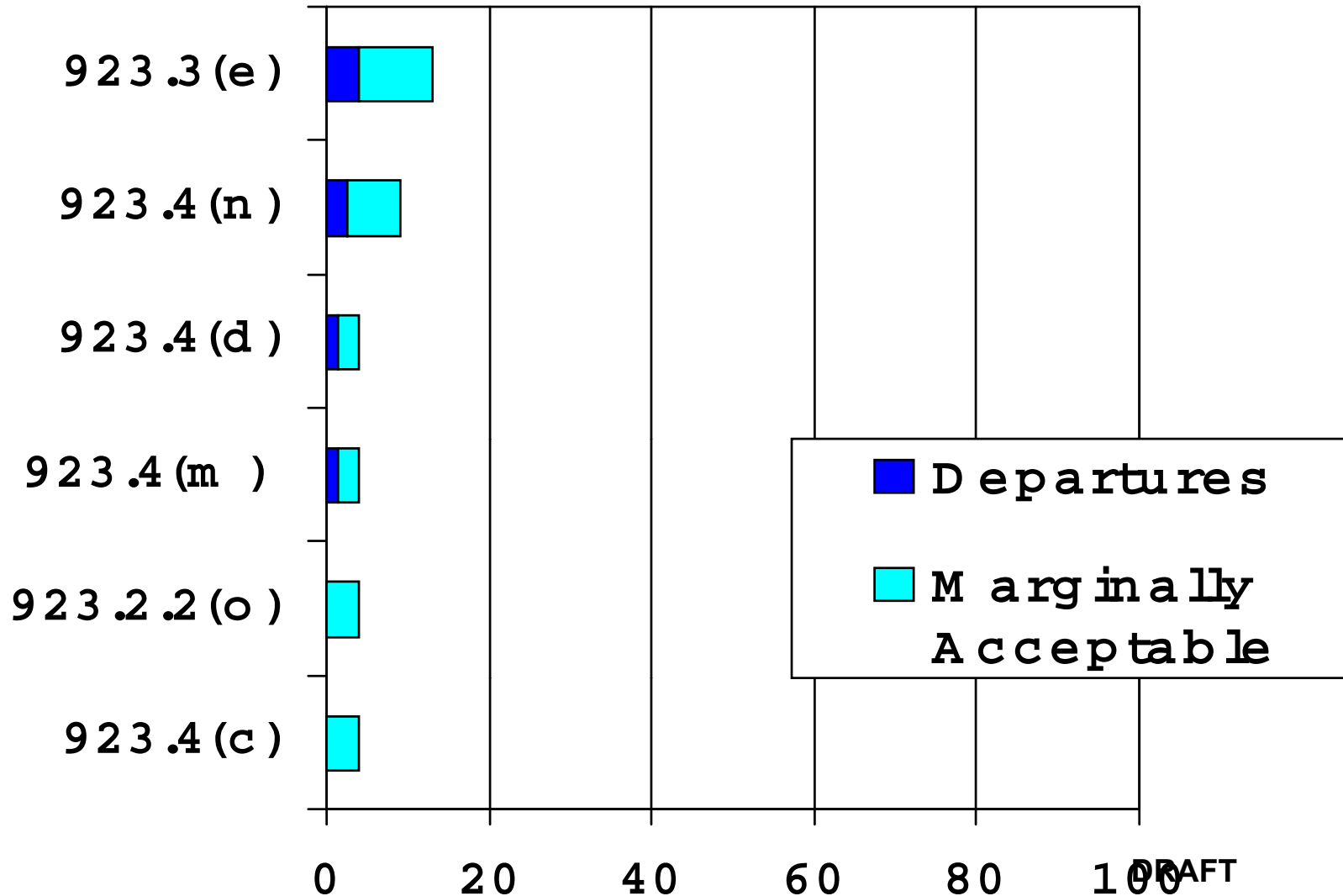


# Top Six FPR Departures & MAs for New Culverts

- 923.3(e) Xing fills & approaches built/maintained to prevent diversion if obstructed.
- 923.4(n) Xing/approaches maintained to avoid diversion.
- 923.4(d) Xing open to unrestricted passage of water.
- 923.4(m) Inlet/outlet, etc, repaired /replaced as needed.
- 923.2(o) No discharge on erodible fills w/o suitable energy dissipators.
- 923.4(c) Waterbreaks maintained to divert into cover.

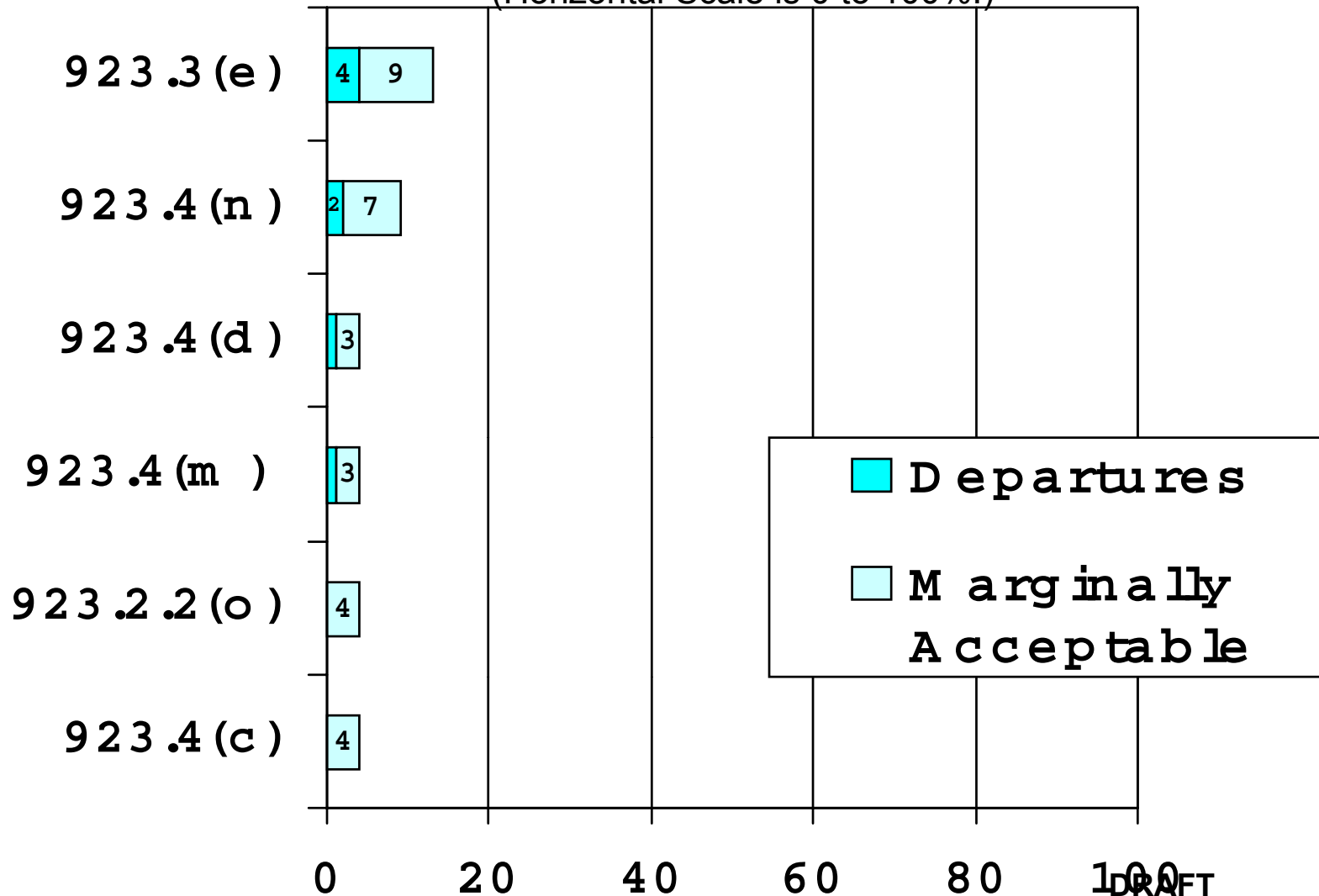
# Top Six by Percentage for New Culverts $n = 76$

(Horizontal Scale is 0 to 100%.)



# Top Six by Percentage for New Culverts $n = 76$

(Horizontal Scale is 0 to 100%.)





# FPR Departures & MAs for Non-Culverts



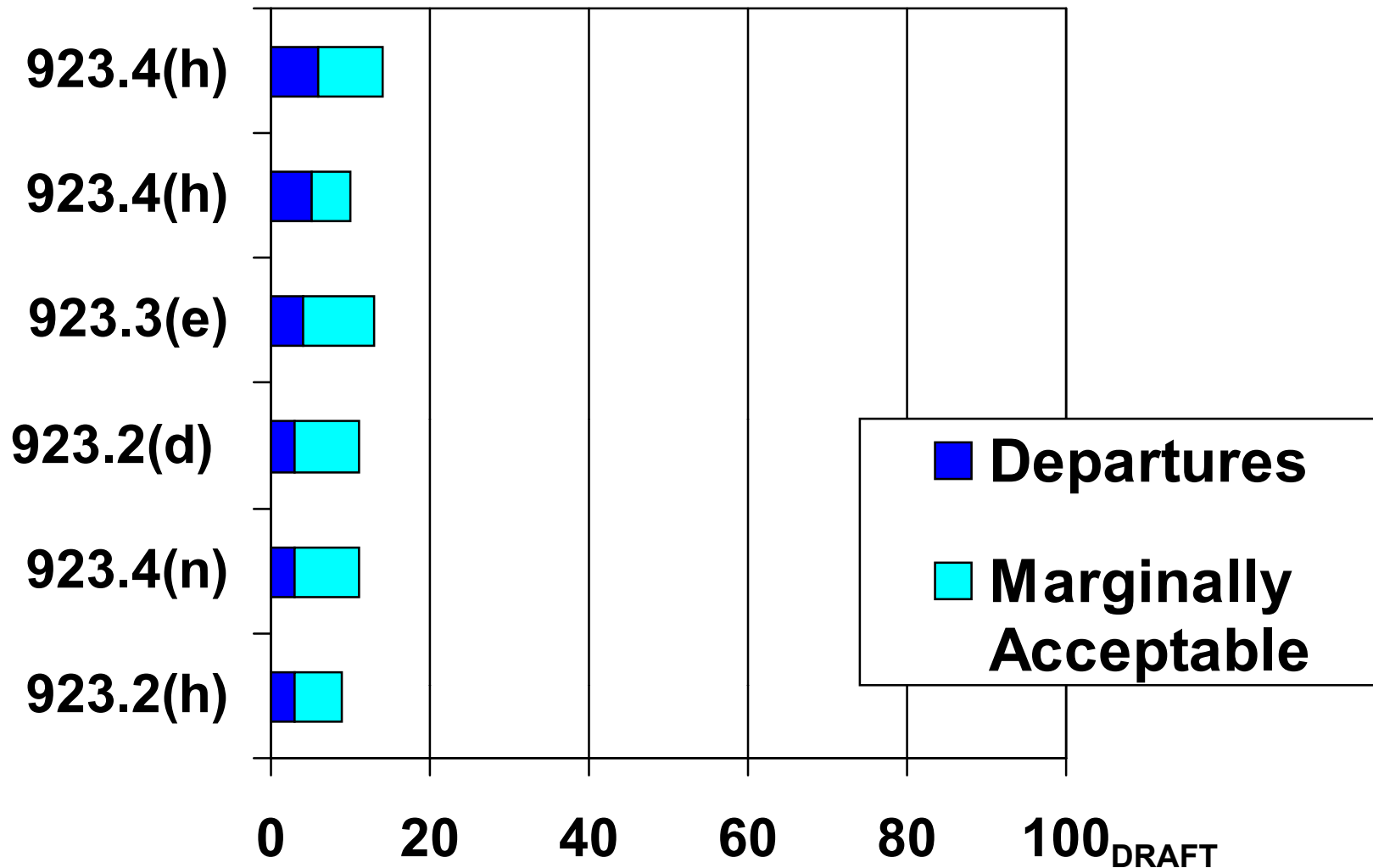
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# Top Six FPR Departures & MAs for Non-Culvert Xings

- 923.2(h) Size, #, location of structures minimize erosion.
- 923.4(h) Size, #, location of structures okay to carry runoff.
- 923.3(e) Xing fills & approaches built/maintained to prevent diversion if obstructed.
- 923.2(d) Fills across channel built to minimize erosion
- 923.4(n) Xing/approaches maintained to avoid diversion.
- 923.2(h) Size, #, location of structures maintains/restores natural drainage pattern.

# Top Six by Percentage for Non-Culvert Xings $n = 102$

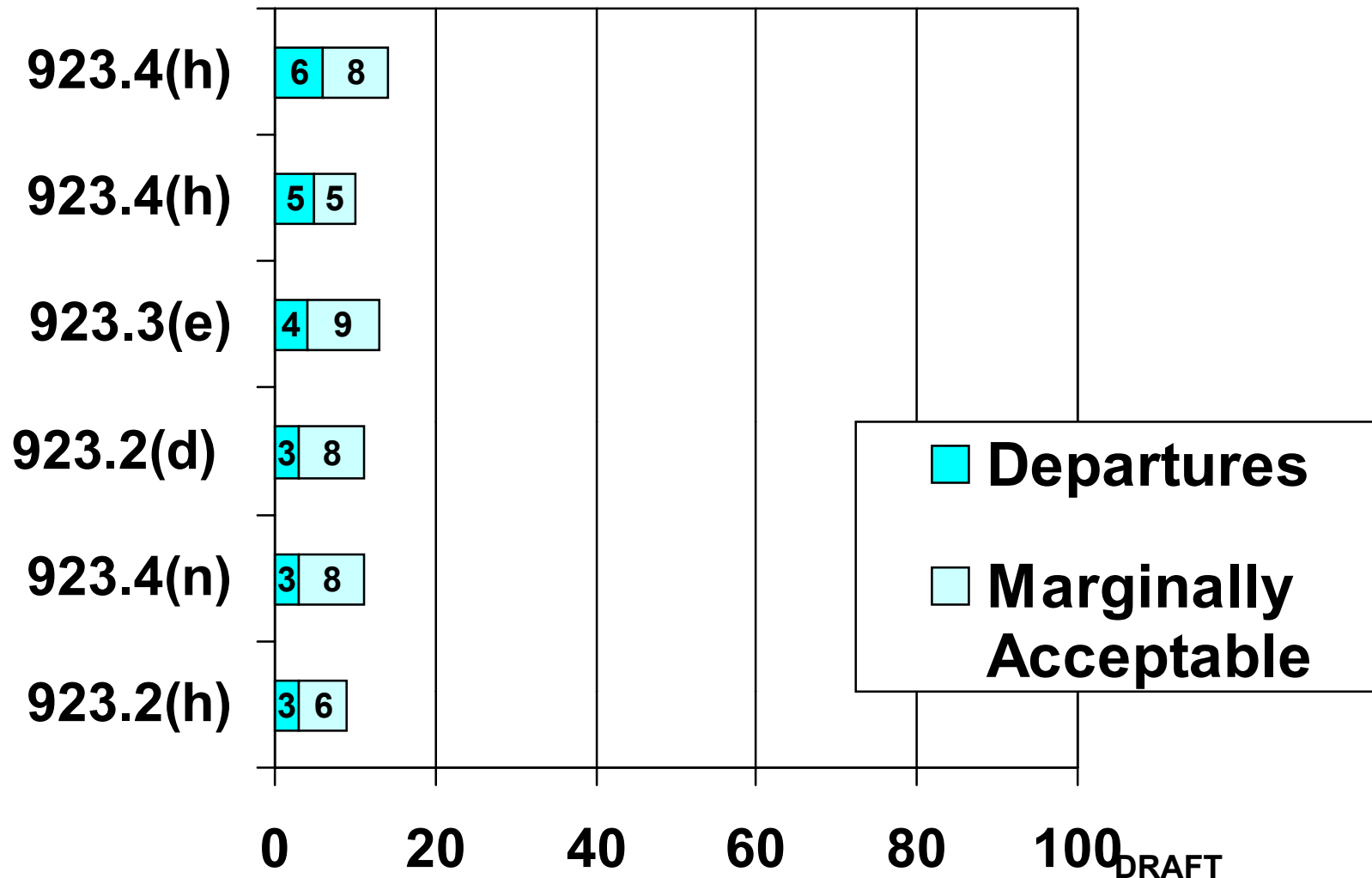
(Horizontal Scale is 0 to 100%.)





# Top Six by Percentage for Non-Culvert Xings $n = 102$

(Horizontal Scale is 0 to 100%.)



# FPR Departures & MAs for Removed/Abandoned Xing's



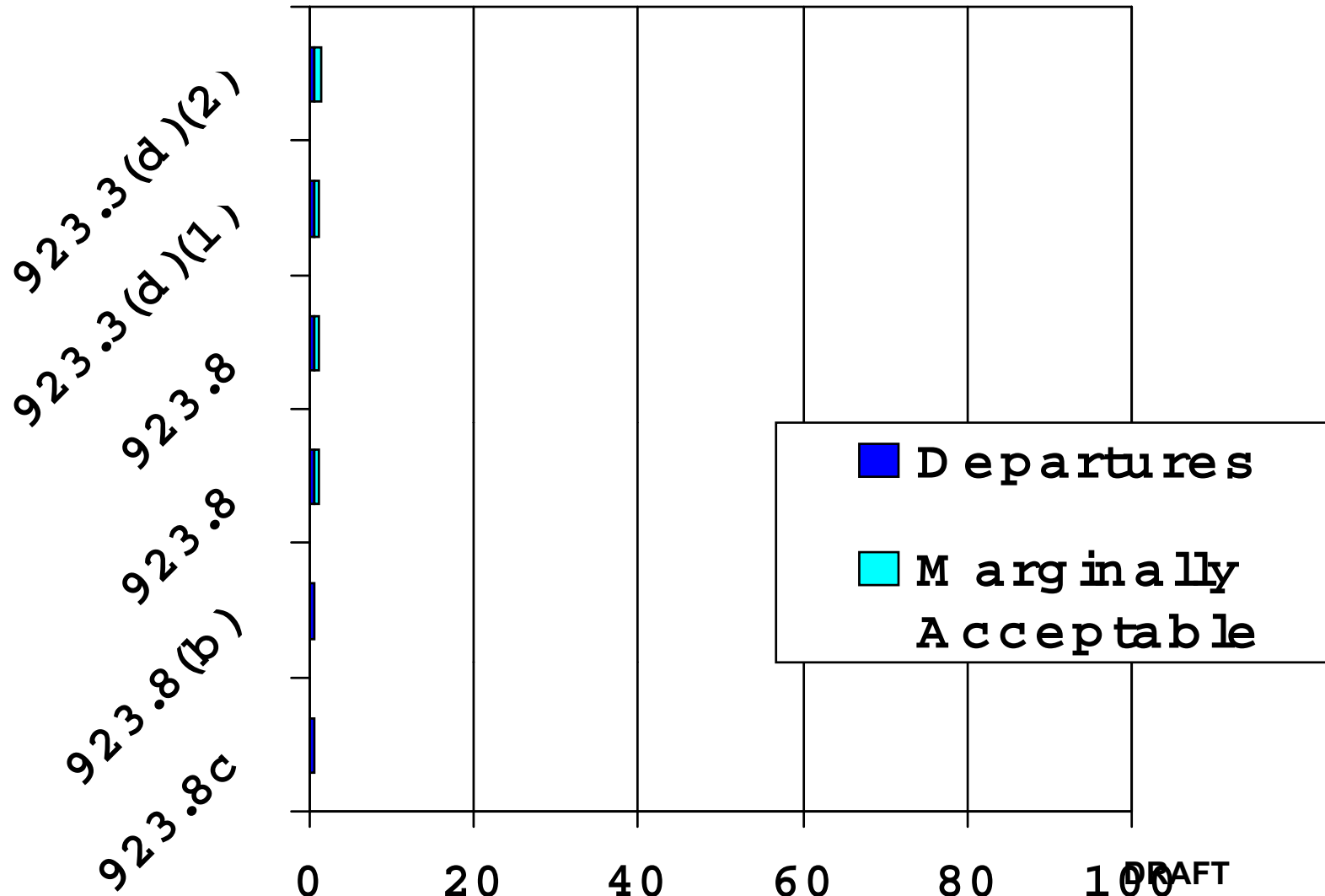
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# Top Six FPR Departures & MAs for Removed/Abandoned Xings

- 923.3(d)(2) Removed---cutbank sloped back to stop slumping.
- 923.3(d)(1) Removed---fills excavated to reform channel.
- 923.8 Abandonment---maintenance free drainage.
- 923.8 Abandonment---minimize concentration of runoff.
- 923.8(b) Abandonment---stabilization of exposed cuts/fills.
- 923.8 (c) Abandonment---grading of road for dispersal.

# Top Six by Percentage for Removed/ Abandoned Xings $n = 30$

(Horizontal Scale is 0 to 100%.)



# FPR Departures & MAs for Bridges



- Only 7 bridges in the sample.
- No Departures.
- Only one Marginally Acceptable rating:  
923.3(e) Xing fills & approaches built/maintained to prevent diversion if obstructed.



# Watercourse Crossing FPR departure rates are lower for MCR than for HMP.



This may be due to:

- Fewer overwintering periods;
- Differences in monitoring forms, rating categories, and reviewer opinions; and
- Requirement that major problems be fixed prior to plan completion report approval.

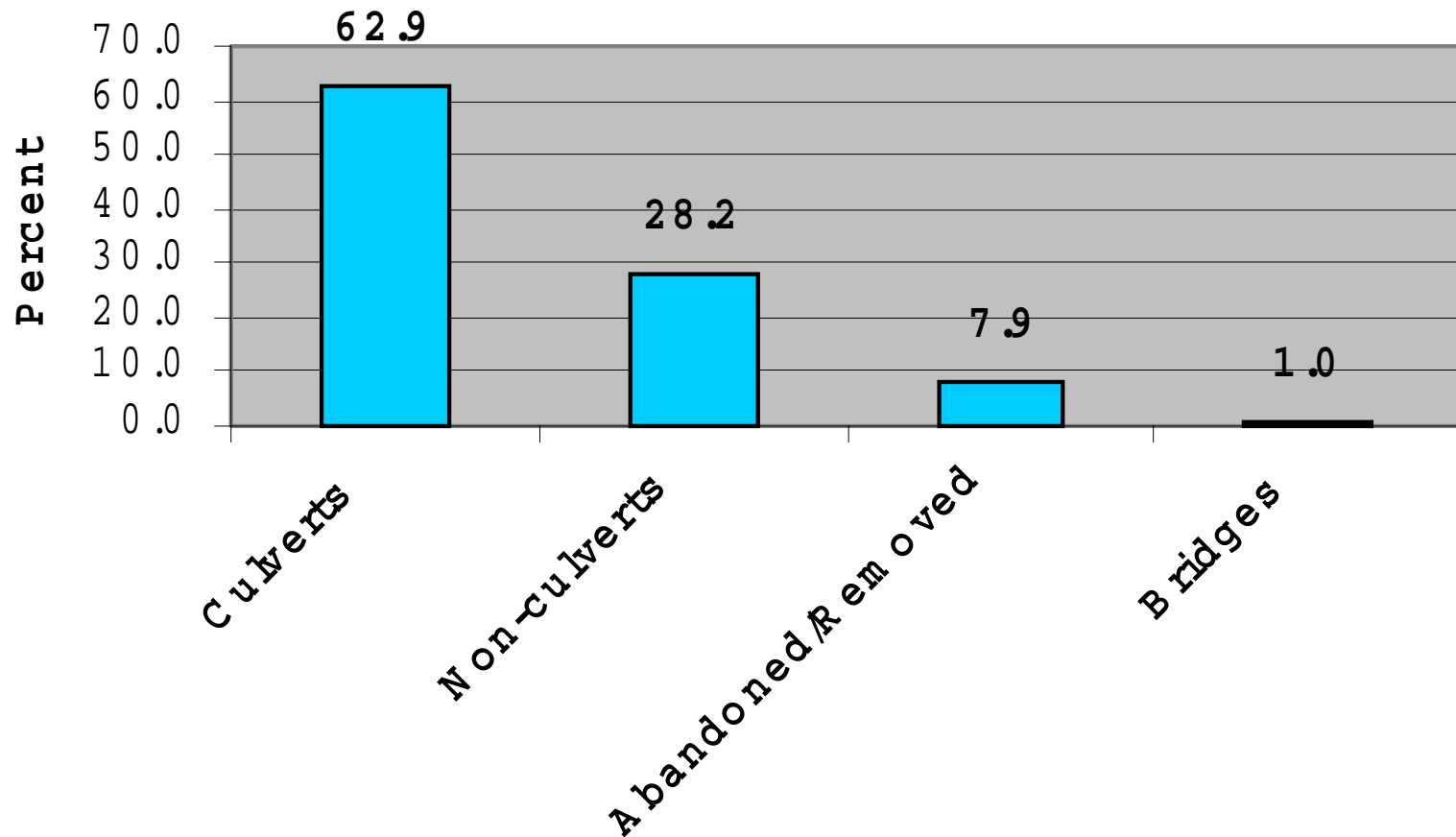
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# Modified Completion Report Monitoring Watercourse Crossing Effectiveness



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# Modified Completion Report: Crossings Rated for Effectiveness (n= 291)



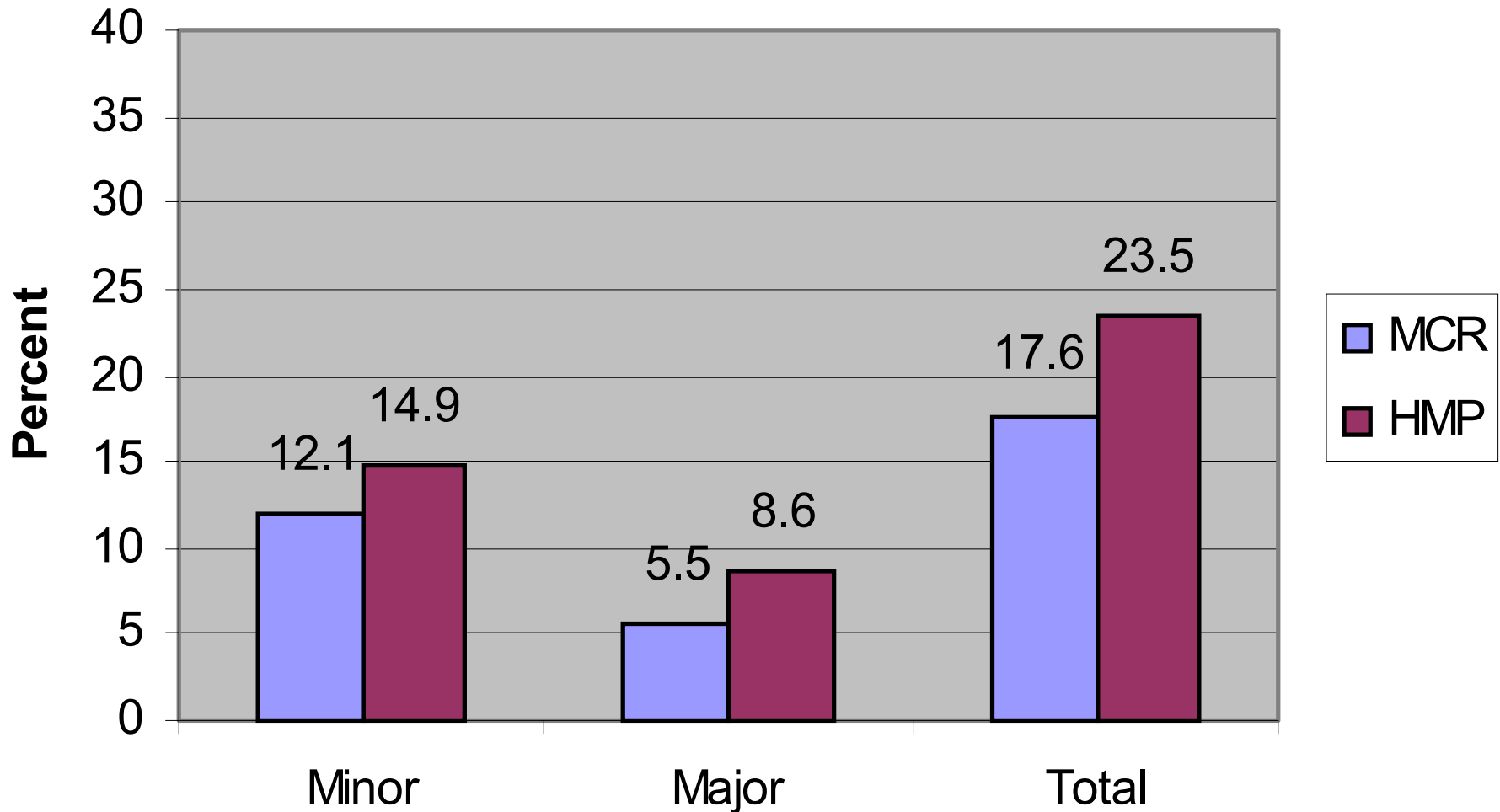


# Culvert with Sediment Plugging



# Culvert: Plugging

## MCR vs. Hillslope Monitoring Program (HMP)



**MCR: n = 182; HMP: n = 336**



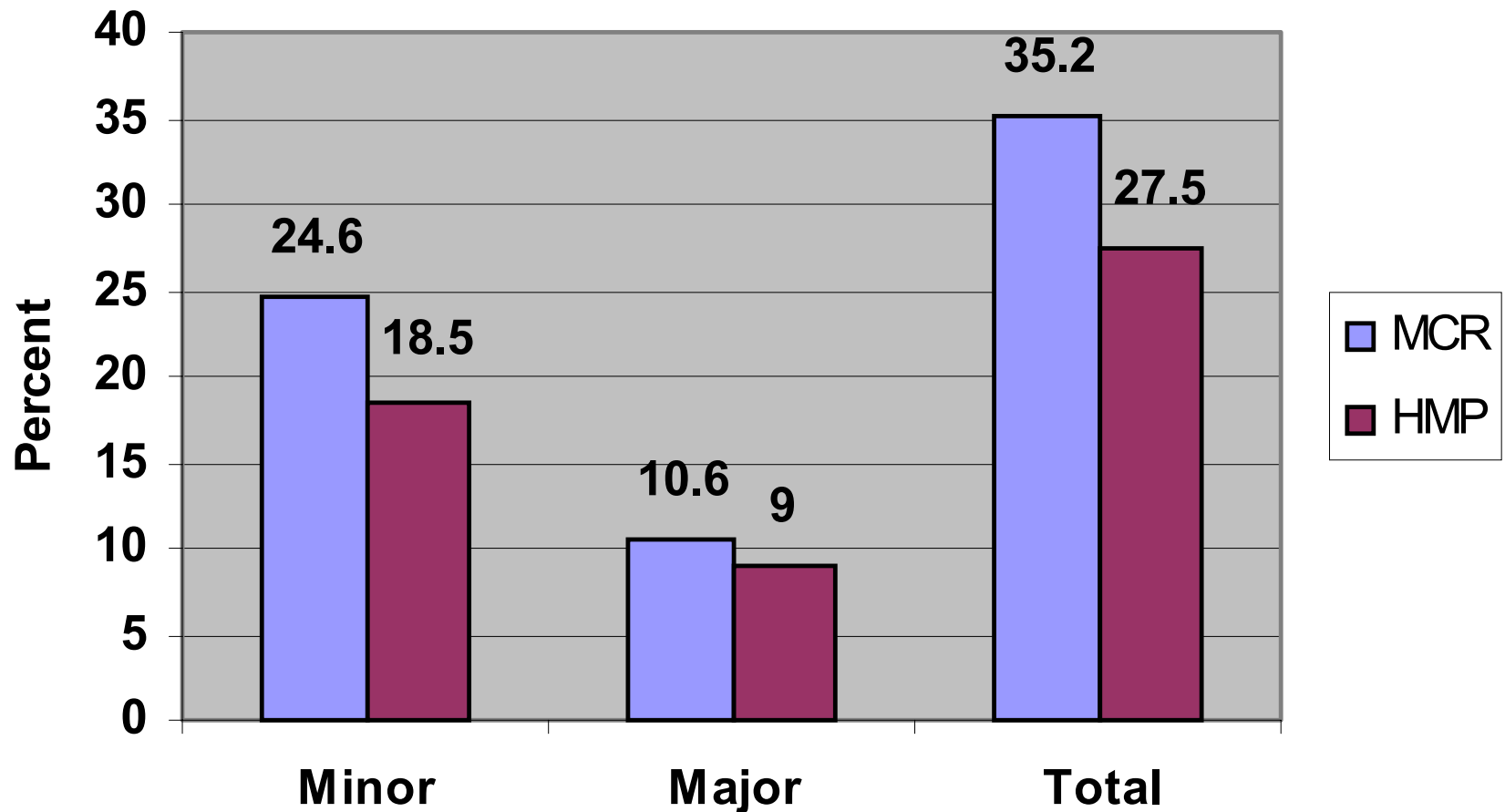
# Gully from Diversion below Culvert



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# Culvert: Diversion Potential

## MCR vs. Hillslope Monitoring Program (HMP)



MCR: n = 179; HMP: n = 335

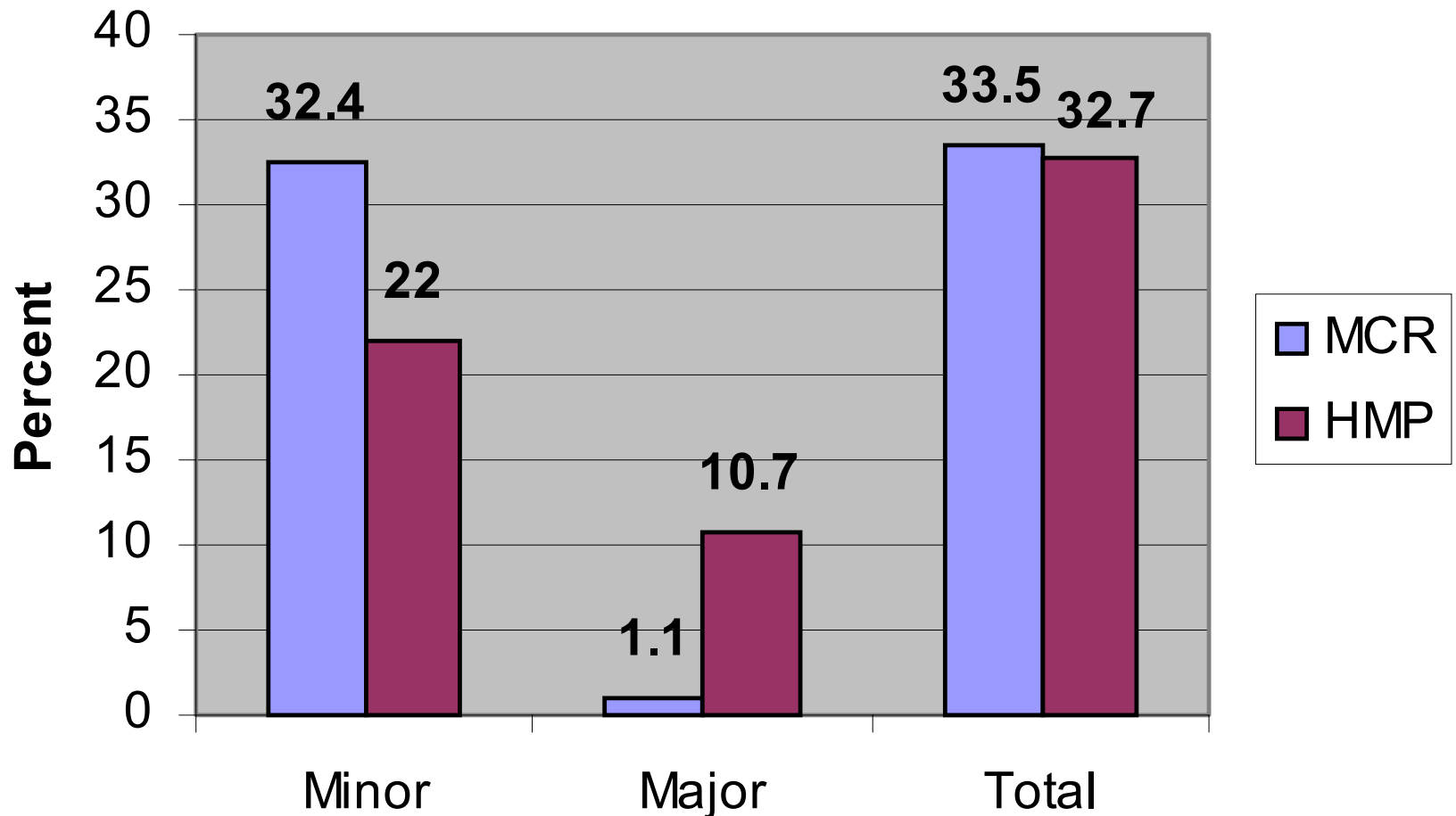


# Culvert with Scour at the Outlet



# Culvert: Scour at Outlet

## MCR vs. Hillslope Monitoring Program (HMP)



**MCR: n = 182; HMP: n = 336**

# Abandoned/Removed: Channel Configuration

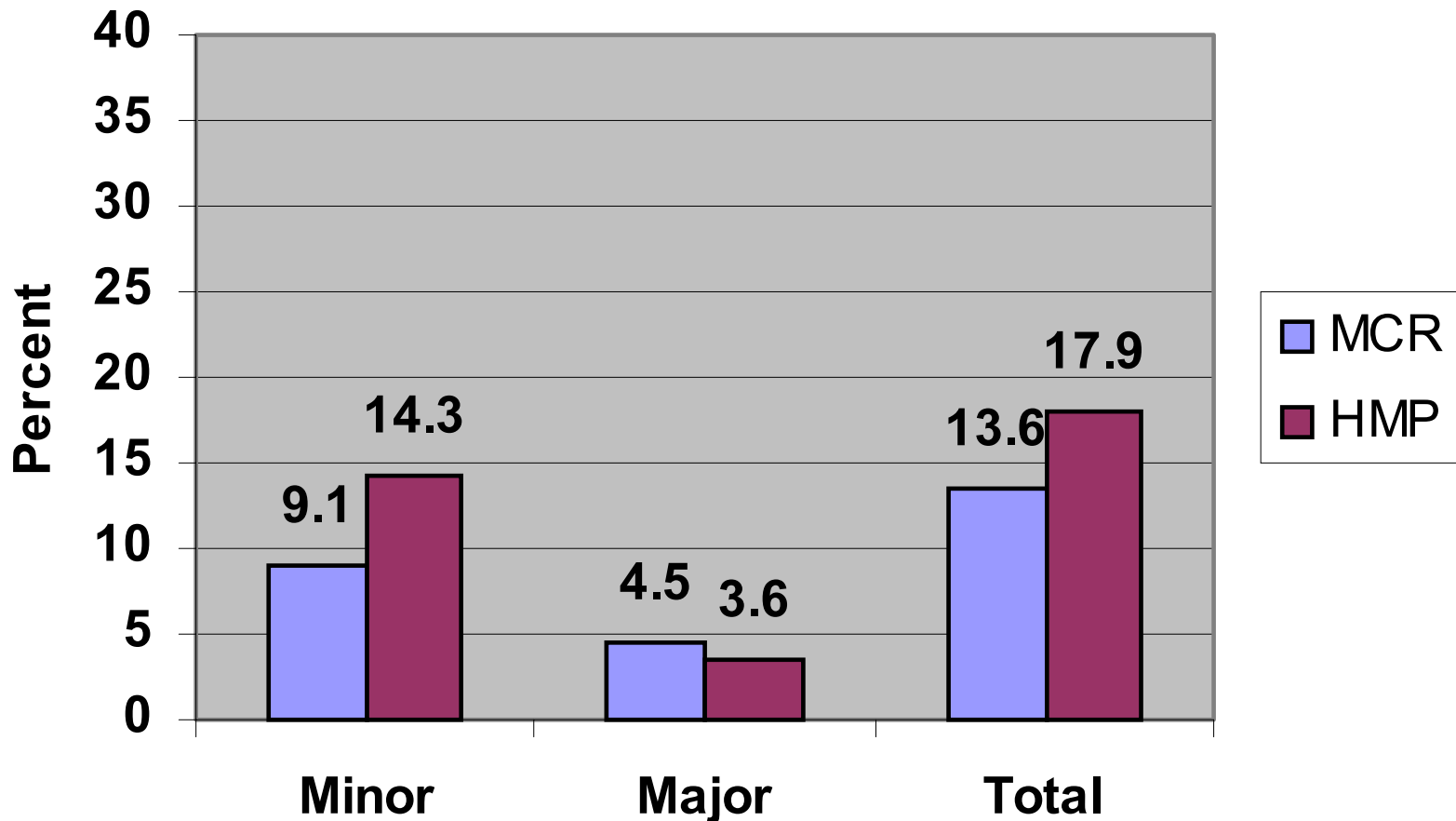


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# Abandoned/Removed: Channel Configuration

## MCR vs. Hillslope Monitoring Program (HMP)

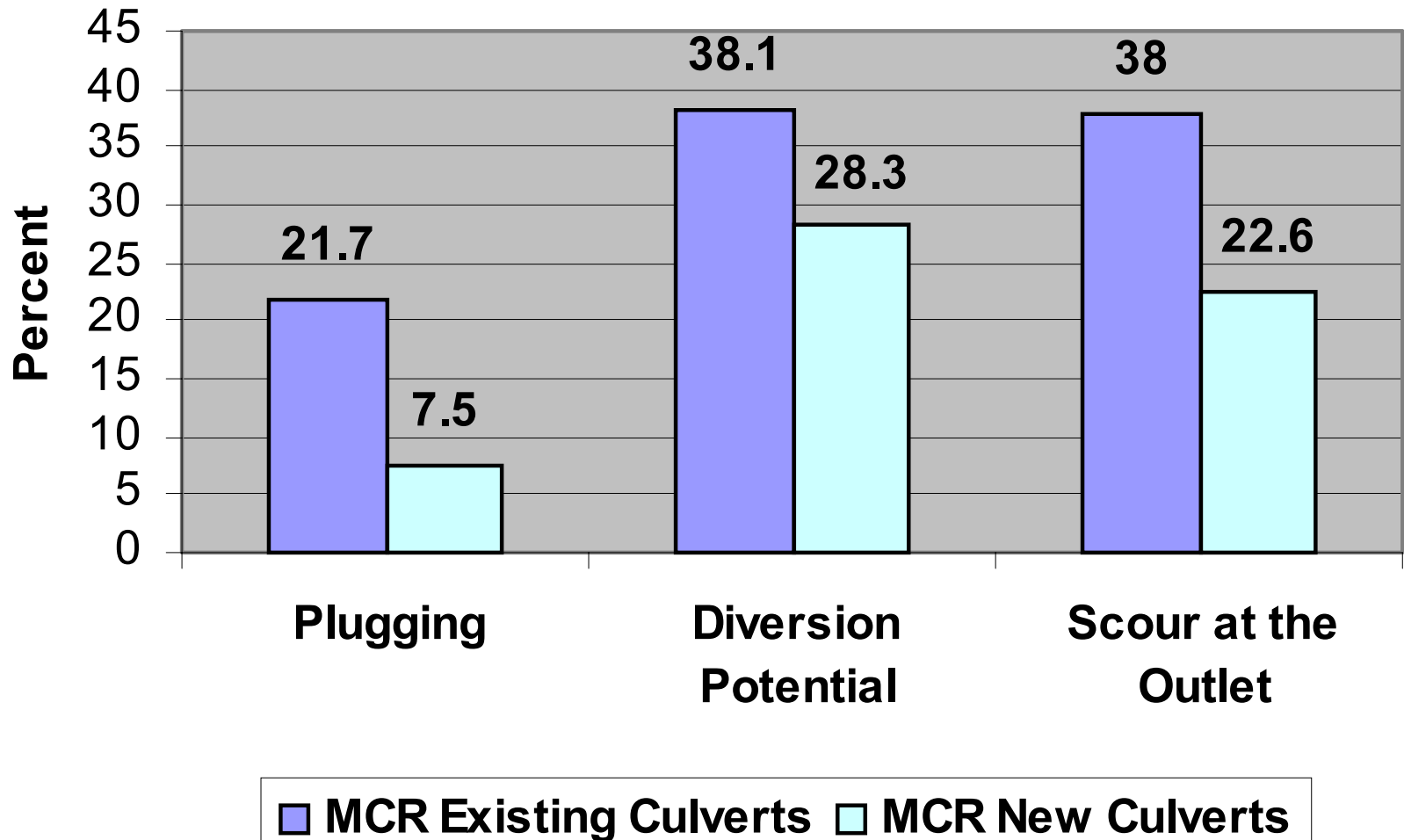


MCR: n = 22; HMP: n = 84



# MCR Culverts:

## Existing vs. New Pipes (Minor + Major Ratings)



# Modified Completion Report Monitoring

- Due to budget uncertainties, many Forest Practice Inspectors accepted jobs in Fire Protection in 2004.
- Out of 72 inspectors, 36 inspectors (50%) accepted Fire Protection positions.
- The 50% reduction in inspectors greatly reduced the amount of time the remaining inspectors could commit to collecting MCR data.
- As a consequence CDF suspended MCR monitoring on THPs completed after July 1, 2004.

# Modified Completion Report Monitoring

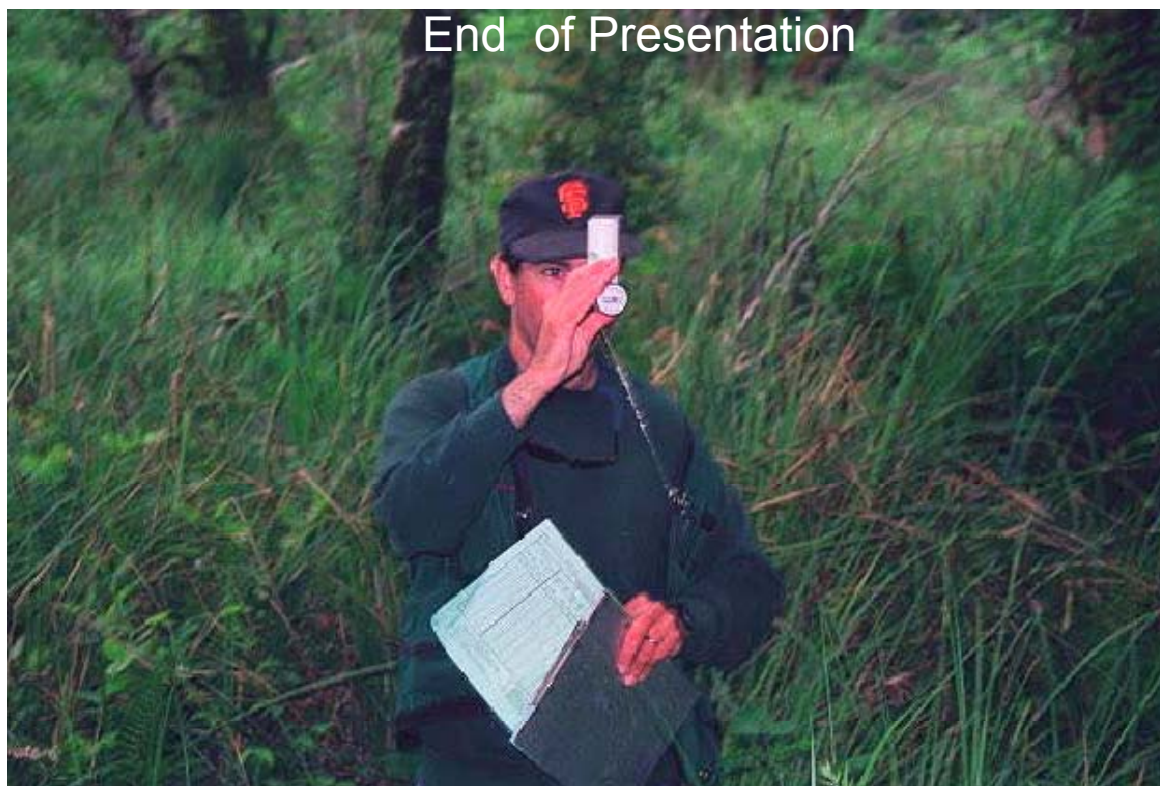
- To do list:
- **Write a report on MCR results** to date and post it on the BOF's Monitoring Study Group (MSG) webpage.

# Modified Completion Report Monitoring

- Looking ahead:
- Deputy Director Bill Snyder has asked for a Phase II Modified Completion Report (MCR) Monitoring effort to complement the developing Interagency Mitigation Monitoring Program (IMMP).
- CDF's Audit Foresters will oversee MCR Monitoring in their Regions in Phase II.

---End of Presentation---

# Modified Completion Report Monitoring



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# **Modified Completion Report Monitoring**

http://

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